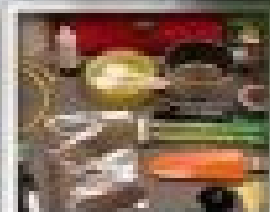
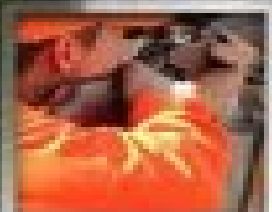
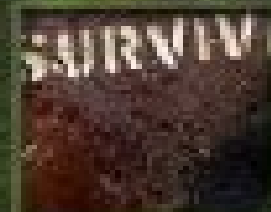
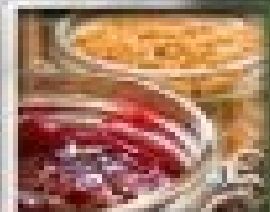
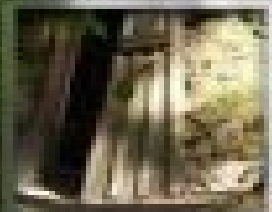
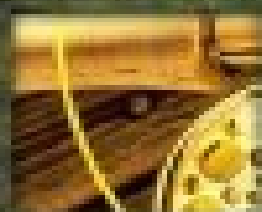


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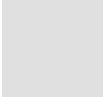
Survival Pocket App

by Michael Angelo, 2014,
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Introduction to the Survival Pocket App

www.SurvivalPocketApp.com

There is a lot of information on the internet about how to start an organic garden, learn basic first aid skills, food storage and more, but none of it is screened or consolidated into one app.

Let me introduce you to the first app that consolidates topics that everyone should know, from gardening to hunting, and fire-starting tips to building a shelter, all in one handy app.

The Survival Pocket App. was created to provide time-tested self-reliance skills and information that previous generations knew and relied on to live. Our generation has an increasing need to learn these skills, live more healthy, save money at the grocery store, and live in harmony with all that nature provides.

The Survival Pocket App. is the first of its kind that brings together the best survival information and DIY projects from experts in numerous fields to deliver life-saving information to your smartphone, laptop, tablet or PC.

The app. features VoicePass mobile security that allows you to securely store and access your Emergency Preparedness Plan and more using your own Voice Password.

Special Thanks To U.S. Air Force Survival Instructor Gary Benton For All His Help.

Gary Benton spent over 26 years on active military duty with the United States Air Force. Gary spent the first 12 years of his career as a Life Support Survival Instructor where he taught aircrew members how to use survival gear as well as how to stay alive in all parts of the world. Gary has over 45 years of hunting, hiking, camping, fishing, and meandering in the woods. Gary is the author of three survival books, "Simple Survival, A Family Outdoors Guide" and "Impending Disasters." Gary's latest book, "The Fall of America: Premonition of Death," is available at:

http://www.amazon.com/The-Fall-America-Premonition-Death-ebook/dp/B00F1S4BAG/ref=pd_sim_sbs_kstore_2

GARDENING

[How To Start A Window Herb Garden](#)

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HOW TO START A WINDOW HERB GARDEN

One of the most rewarding gardening tasks is planting and tending an herb garden. Planting herbs can save you money in the long run, because it keeps commonly used herbs on hand for cooking. You can simply use what you need for 1 recipe and leave the rest to grow until the next time. In order to have a healthy indoor herb garden you must have a sunny window sill, potting soil, pots and seeds for your favorite herbs. Your herb garden may grow and change over time as your expertise grows and you try planting new herbs. Learn how to start a window herb garden.

STEPS

- Planning your Herb Garden

1. **Choose your window.** Herbs must have at least 6 hours of sunlight per day, so choose an east or south facing window in your home. Measure the windowsill so you know how wide your pots can be. Note: Florescent light can help your herbs to thrive, so you should also choose a room where you have florescent light to help keep your plants alive through cloudy and/or winter months.
2. **Choose the herbs you would like to grow.** You should choose herbs that you use a lot in your cooking, because they need to be trimmed back, or used, on a regular basis. Not all herbs are the same; the following are types of herbs that you can plant.
Plant annuals, such as sweet basil or parsley. An annual plant will die back each year. You may need to remove it each year and start anew.
Plant perennials, such as oregano, rosemary, chives, thyme and sage.
Perennials grow back each year and do not usually need to be replanted. You do not want to plant annuals next to perennials, because removing the annual plant can disturb perennial roots.
3. **Decide if you want to plant seeds or seedlings.** If you want to plant seeds, you will need to buy a seed packet and start them in a moist environment, before weeding out the stronger plants from the weaker ones. If you buy seedlings, you need only plant a seedling with already-formed roots in your container and water it as usual.
 - You can find seeds at most gardening and home improvement stores. You can find seedlings or "starts" at home improvement stores or farmer's markets.
4. **Choose your pots.** Bring a ruler to the gardening or home improvement store so you can measure according to the width of your window sill. Seeds require smaller pots, where starts require larger pots.
 - You can find a special container at gardening stores for planting seeds. A seed planter divides each seed into a small section. You plant the seeds in potting soil and keep them warm and moist. After they start to grow, you replant the sprout and roots in a larger pot.
 - Pick containers with excellent drainage. This means that they should have holes in the bottom where the water can seep out. If clay, plastic or wood

pots come with trays, that is even better, because it keeps a wooden window sill clear of water. Drainage is essential to keep the herb roots from rotting.

- Planting your Herb Garden

1. **Soak your seeds in a wet paper towel for 2 to 4 hours before planting.** Place potting soil in the seed tray or small pot up to 3/4 of an inch from the top of the pot. Sprinkle the seeds in, and then cover them with 1/4 inch of potting soil.
2. **Sprinkle the seeds with water and place them in indirect sunlight.** If your house is not very warm, you can create a small greenhouse over each seed pot by covering it tightly with plastic wrap. You want to create a warm, moist environment.
3. **Place the seeds in the sun when they germinate and start to sprout.** Spray them with a spray bottle to water them, so that you don't break the seedlings with strong water pressure.
4. **Plant your seedlings 2 to 3 inches deep into your larger pot, if you are transplanting from a seed tray or planting starts.** Place a small amount of gravel in the bottom of each pot to improve drainage. Place some potting soil into the container, and make a hole in the center for the plant. It is a good idea to choose a potting soil with perlite in it. Perlite is a volcanic glass that has high water content. If not, you can add about 20 percent perlite to it for an even healthier planting environment. You should also choose a potting soil with peat moss in it.

- Caring for your Herb Garden

1. **Water your herb garden frequently, to make sure it stays moist.** Do not let the soil get dry, or the plants will die off. Water from the bottom, near the soil, since some herbs do not like to get water on their leaves.
2. **Snip off the starts of neighboring herb plants to prevent overcrowding.** You can use kitchen shears and cut them off at soil level, so they will not be competing for the same nutrients. Frequent snipping and trimming can give you bushy plants that provide enough sprigs for cooking.
3. **Snip off sprigs of herbs to use in your recipes.** Wash them thoroughly. Use immediately.
4. **Leave at least 1 healthy sprig of your herb plant at all times, so that it can continue to grow and be healthy.**
5. **If your herb garden gets overcrowded or you aren't using it and they have become bitter, you can cut down the overgrown plants just above the soil.** They will regrow tender shoots.

- Tips

- If your plants are not thriving, you can add plant food every 10 days. This is available at home improvement and gardening stores. You can also place the herbs by a grow lamp, to help them if they aren't getting enough sunlight.

- Warnings

- Do not use pesticides or other harsh chemicals on your herb garden. This window sill garden is meant for direct kitchen use, so everything that goes in should be safe to consume.

- Things You'll Need

- Seeds or seedlings
- Potting soil
- Pots
- Water
- Ruler or measuring tape
- Gravel
- Seed tray
- Saucers or trays
- Spray bottle
- Plastic wrap
- Paper towels
- Perlite
- Kitchen shears

<http://www.wikihow.com/Start-a-Window-Herb-Garden>

HOW TO CHOOSE WHAT TO PLANT IN YOUR GARDEN

Many homeowners buy their homes based on the presence of a garden, or the possibility to cultivate one on a new lot. However, all gardens require a certain amount of planning and upkeep depending on the type of garden you choose, so it's best to choose what to plant in your garden based not only on personal preference, but also on the local climate, your budget, and how much time you want to spend gardening. The following steps will show you how to make informed decisions when it's time to choose what to plant in your garden.

STEPS

1. **Determine what types of plants grow naturally in your climate to determine the style of garden you want.** Though this isn't a foolproof way to guarantee a thriving garden, it will maximize the chances of the plants doing well without having to resort to artificial climate creation, such as a greenhouse. A Mediterranean garden with olive trees will be much harder to maintain in a cold climate, while an English rose garden will require a lot of extra irrigation in a warm climate.
2. **Consider how much sun and shade you have in your garden.** Your neighbor's home, your own home and any outbuildings, as well as existing trees or shrubs, may cast shadows where you want to plant, so take this into account when choosing what to plant in your garden.
3. **Choose garden plants that create textures and layers.** This makes the garden more interesting to look at and offers more depth than garden plants that are all the same type or height.
 - Evergreen shrubs and trees offer color and structure all year round, which means that your garden will never look completely bare.
 - Trees add height, color, and interesting shapes to your garden. Deciduous trees are especially interesting to provide accents that change with every season, as they bud, bloom, and finally shed their leaves.
 - Shrubs can act as filler between trees or larger plants, and can be beautiful additions to your garden in their own right. There are evergreen shrubs and deciduous shrubs, as well as shrubs that flower.
 - Ground covering plants are sprawling and remain low to the ground. Consider how thickly and quickly they grow to determine how effective they will be in your garden.
 - Climbing plants, such as vines, provide texture and cover for walls, decorative elements, and any eyesores you want to cover.
 - Perennials bloom every year and come back each year. Annuals die after a year, and cumulatively cost more as you have to replace them every year.

4. Determine whether you need to avoid potentially dangerous plants, such as shrubs with poisonous berries, if you have children or pets.
5. Visit your local gardening center and choose what to plant in your garden
<http://www.wikihow.com/Choose-What-to-Plant-in-Your-Garden>



HOW TO CHOOSE VEGETABLES TO GROW

Growing vegetables at home can be an inexpensive way to supply your family with high-quality, locally-grown vegetables. Different vegetables are suited to different climates and garden types. Also, you may have preferences for the types of vegetables you want to grow and the amount of work they need. This article will show you how to choose vegetables to grow.

STEPS

1. Consider which vegetables grow best in your climate.

- A good way to ascertain if a vegetable is suited to your area is to look at a zone map and chart to identify the zone in which you live. Then you can check a zone chart to find out which vegetables grow best in your zone. Zones are numbered 1 to 12 and are based on the average minimum temperature in an area.
- Some vegetables grow best in warm conditions and cannot tolerate frost. These include snap beans, corn, cucumbers, melons and peppers.
- Vegetables that grow best in somewhat cooler weather and can tolerate short periods of frost include beets, broccoli, cabbage, carrots, lettuce, spinach and sweet peas.
- Perennial vegetables like asparagus and rhubarb can be harvested year after year if they are planted in the right area.

2. Choose vegetables that grow well where you plan to plant them.

- Some vegetables prefer bright sun, while others prefer some shade. Learn the preferences of the vegetables you are interested in planting in order to find the proper placement for them in your garden.
- Some vegetables, like tomatoes and cucumbers, grow well in pots. Others, such as carrots and beets, need to be planted in the ground. If you are planning to grow vegetables in pots on your porch, these and other root vegetables are probably not a good choice.

3. Determine how much time you are willing to invest in your vegetable garden.

- Some vegetables only need weed control to thrive. These vegetables need less care and take less of your time than other types.
- Some vegetables, such as peas and tomatoes, need staking or a fence or trellis. Consider the time needed to stake or build supports for these vegetables.
- Some vegetables are more likely to be infested by pests than others. Consider the amounts and types of pest control you are willing to use in your garden.

4. Choose vegetables that you and your family enjoy or ones that you wish to try.

- Many vegetables have a deeper flavor when they can be picked at the peak of ripeness and aren't transported very far. You may be surprised to

find that your family and friends find they enjoy homegrown vegetables that they do not enjoy when they are bought in a store.

- Many varieties of vegetables that are not commonly available in grocery stores can be grown in your garden. Vegetable gardening is a way to expand your eating choices.

TIPS

- Consider companion gardening as an organic method of pest control. In companion gardening, plants that have beneficial effects on each other are planted together. One plant may repel the pests of the other or provide important nutrients into the soil.

<http://www.wikihow.com/Choose-Vegetables-to-Grow>

HOW TO BUILD ECONOMICAL RAISED VEGETABLE BEDS

Raised beds are a great way to grow vegetables. They are a barrier to ground based pests, offer protection to less hardy plants, enable you to control your growing environment, and really save you a lot of backache!

STEPS



1. **Start your raised bed frame.** Take one of the 2"x4" planks and offer it up to one of the 4' scaff planks, allowing 10cm to protrude from what will be the bottom of your frame. The finished bed frame will be 45cm deep (2x 22.5 cm width of scaff plank) - so you leave a 10cm 'foot' at the bottom to help anchor it in the ground.
2. **Construction.** Pre-drill the holes for 2 screws, through the scaff plank and the support 2x4 from the outside. Use a drill bit smaller than the screw width.
 - This is vital, as the screws are so long, they become impossible to tighten without pre-drilling.
 - Attach the scaff plank to the support 2x4.
 - Repeat until you have your frame completed frame.
3. **Prepare the location.** Measure out a 6x4' area on the ground where you want your raised bed to sit and mark it using sticks and string - this will ensure your edges are straight. (Choose a sunny spot for best vegetable results.) Make sure you have the required 10cm depth dug at the corners for the frame feet. Dig over the top layer of soil, piling the dug earth to the centre.
4. **Level it.** With the help of a friend, flip your raised bed frame and lay it, feet first, on to the dug area of the same size. Use the spirit level to ensure the frame is sitting level.
5. **Add filling.** Your raised bed can be filled with any type of soil. For best results, ensure that the soil is well raked.

TIPS

- Good topsoil is vital for growing vegetables, and is available cheaply from good garden supply stores. The deeper the better, but even a few inches will help.
- Scaffold Planks are available from many suppliers nationwide, most will deliver them pre-cut to your specifications. The initial author made 2x 6x4' and 1x 4x4' raised beds for \$100.

WARNINGS

- Some weatherproofing for wood is toxic, ensure you use non toxic weatherproofing (or none at all) on the surfaces that will form the inside of your raised bed, otherwise the toxins can leach into the soil over time. Normal Weatherproofing is fine for the outer facing surfaces. N.B. Not weatherproofing the inside of the frame will shorten its life, but it should be good for 5+ years anyway.

<http://www.wikihow.com/Build-Economical-Raised-Vegetable-Beds>



HOW TO CARE FOR A FOOD GARDEN

There is nothing like [growing your own food](#), or at least a part of it. You'll enjoy the freshest [fruits, vegetables](#), and [herbs](#) you can get, and there's a sense of satisfaction from knowing where your food came from. Many [food plants are easy to care for](#). Here's how.

STEPS

1. **Plan your space.** Choose where to plant what according to the [micro climates](#) in your yard. How much sun does each place get? How much wind? Does an area tend to be especially wet or dry? The hot, south side of a building or fence will benefit a very different set of plants than a low, wet spot in [dappled shade](#).
2. **Group plants with like requirements together.** It will help with the [watering if plants](#) with similar water requirements are nearby.
3. **Grow a variety of crops.** A large number of identical plants invite more pests and diseases than a variety of different plants.
Your garden is a great place to experiment with more than just a couple of veggies.

- Squash, melons, cucumbers, pumpkins, tomatoes, peppers, potatoes, peas, beans, and corn are all fairly easy plants for beginners.



- Asparagus and artichokes are [perennial plants](#). Properly cared for, they will return year after year.



- Fruit trees, grapes, and different sorts of berries also grow year after year.



- Herbs, such as basil, rosemary, oregano, and thyme can be used to season your other plants.



- [Many flowers](#), including chives, hibiscus, fuchsia, roses, and nasturtiums, are also edible^[1]. Try garnishing your next salad with some nasturtium blossoms.



4. **Grow what you like.** There is no point in growing rows of radishes if you don't like radishes.
5. **Grow a reasonable amount to eat or can.** A single [zucchini](#) seed can keep a moderately sized household busy all summer. Another zucchini seed can survive nicely for a year on a shelf in a cool, dry place. A good rule of thumb is to aim for at least five meals' worth of any given crop. If something was a great success, you can always plant more next season.



6. **Rotate crops.** [If you are](#) planting the same thing from one year to the next, plant it in a different location. Try a different variety, too. It helps to keep [pests](#) and diseases from doing too much damage.
7. **Prepare the soil.** Dig in plenty of [compost](#) or manure. It takes work, yes, but it improves the structure and fertility of the soil. It also improves the drainage characteristics.
If you choose to add [chemical fertilizer](#), do so in moderation. Over-fertilizing can burn plants and encourage rapid growth that makes plants susceptible to disease and pests.
Consider [building a raised bed](#), especially if the soil you have is very poor or doesn't drain well.



8. **Plant according to your seasons and zone.** [Know your climate](#) and the requirements of your plants. Seed packets and catalogs can help. Don't plant cold-sensitive seeds too early in spring and don't plant cool season crops at the height of summer. Some crops may never grow well (or at all) in your particular climate, so read the instructions and experiment with various things.
9. **Start your seeds.** Take a garden shovel and make a line that [stretches across the garden](#). Sprinkle the seeds into it and lightly cover over them. Depending on the seeds, you can also poke holes at intervals.



Read the seed package or other instructions specific to your crop. Seeds need to go at different depths and spacings.



Try hills or clusters. If this is a garden you'll be looking at, you could even interweave foods with flowers.

- Know which seeds will transplant and which won't. Starting your seeds in pots can help you get a jump on warm weather or simply get them off to a healthy start.



10. [Inspect your plants.](#) If you start with a seedling from a nursery, take a good look at that seedling before you bring it home. It does not need to be large (in fact, smaller seedlings may become better established in your garden), but it should not be root bound and it should be free of diseases and pests. Don't take it home if it isn't in good condition.
11. [Water regularly.](#) Unless you're getting plenty of rain, that probably means at least daily until the seeds sprout and for the first few weeks until roots are established. After that, it depends upon your climate and the crop.



- Over-watering can drown plants or lead to "damping-off" in seedlings.
- In dry climates, a generous application [on of mulch c](#)an help to keep water in.
- A drip system or soaker hose can spare you having to wander around with a hose.
Remember to put it on a timer or at least set a timer so you don't forget to turn it off.



12. [Thin the seedlings](#). Many seed packets encourage you to plant extra seeds and then thin them.
13. **Support climbing plants.** [Beans and peas](#) and grapes certainly require support. Tomatoes prefer it, and many squashes and melons can [grow up a trellis](#) to save space.



14. [Fertilize](#) the garden. Start about 5 days after they sprout they should be about 3-5 inches tall. You can add a bit of bagged fertilizer to plenty of water, use a slow-release fertilizer according to package directions or, if you prefer the organic approach, you can top-dress the garden with more compost. Remember, don't over-fertilize. It can scorch plants and cause excess growth at the expense of health and production.
15. **Control weeds.** A weed is any plant growing where you don't want it, and it might very well include plants that you want someplace else in your garden, such as poppies, mint, or ivy. Weeds in your food garden will compete with your plants for water, light, and [nutrients](#).
 - Hand pull weeds close to your garden plants.
 - [Hoe](#) the weeds. Try a scuffle hoe. Its blade slides back and forth near the surface of the soil, chopping off the tops of weeds without disturbing too much underneath. Even weeds won't make it if you chop off their tops too many times. Try to pull or cut weeds before they go to seed and make more weeds for next season.

- Apply mulch, especially on pathways and areas away from plants. A thick mulch slows the growth of weeds and makes it easier to pull what does grow.



- [Use weed killers](#) in moderation (if at all). The surface of the soil doesn't need to be spotless all summer, and organic controls are best. Some weeds are growing resistant to chemical herbicides. No weeds withstand pulling or repeated hoeing. Add weeds that haven't gone to seed to your compost pile or let them dry out and use them as part of the mulch in your beds. Weeds that you remove from your garden remove nourishment with them.

16. **[Control pests](#)**. Since this is a food garden, you will probably want to take it easy on the "chemicals."

- Keep the garden healthy. Most plants naturally resist disease and pests if properly cared for. That means enough but not too much water, adequate spacing and light, and proper nourishment in moderation.
- Rotate crops from one year to the next.
- Don't demand perfection. Don't worry too much if a couple of leaves or fruits get chewed on. Water in the morning, especially if excess moisture is a problem. If your schedule only permits evening and you have not automated watering, water the ground and leave the foliage dry, or water early enough in the evening that the leaves can dry fully. Check the moisture level before watering.
- Invite [beneficial creatures](#). [Wasps](#), [bees](#), birds, bats, spiders, [ladybugs](#), [ducks](#), and many other creatures can all help to keep the insect population in check, but only if they themselves are not threatened by your other controls. Use traps targeted for problem pests. Place an upside-down flower pot near your garden or prop up an old board on sticks or other supports. Check it after dark and crush and remove any snails or slugs hiding there. [\[2\]](#) Try insecticidal soap (you can make it yourself [\[3\]](#) or neem oil [\[4\]](#) as less toxic alternatives for garden pest control.



17. **[Harvest your food](#)**. This is why you grew the garden, wasn't it? Besides reaping the rewards of your efforts, harvesting makes many plants produce longer.



18. **Save seeds for next year**. Some plants "come true" (produce a plant similar to the "parent") and some don't. In general, you can save seeds from heirloom and

other non-hybrid varieties, but look it up, if you aren't sure. Saving your own seeds saves yourself having to buy as many for next year.

19. [Prepare for winter](#). Depending on your climate, you may be able to get a cool season crop in on the way to winter (or even during it).



- Clear warm-season plants that have died back.
- Clean up the garden. Dropped fruits and dead foliage can harbor diseases and pests from one season to the next.
- [Overwinter](#) perennial plants.
- Prune plants and plant bare root starts while things are dormant.

TIPS

- Your plants need fresh sunlight so choose the place of your garden wisely.
- Adjust your watering schedule according to the weather. The best rule is to check whether the soil is wet an inch or two deep. Soon, you'll know how often to water for different conditions in your garden and your climate.
- The best control for pests and diseases is to plant a variety of plants and keeping them healthy. Some plants and some years may be better than others. That's part of the process.
- Apply soil amendments like compost and manure in advance to give them time to settle in and mix with the soil before you plant.
- Keep a notebook noting what varieties you planted, where you planted them, when you planted them, how you (and the weather) treated them, and how well they did. It will help you to notice the best ways to treat your yard.
- Food gardens can be very attractive. Look for resources on kitchen gardens or potagers to see examples of food gardens that are designed for looks as well as function.
- It's said that the best fertilizer of all is the gardener's footsteps. Pay attention to your plants and they will thrive.

Warnings

- If you plant flowers as food, make sure that you choose them carefully and treat them as food. Don't spray them with pesticides if you plan to eat them. *If you can't be sure that a flower wasn't sprayed (such as if you bought it from a supermarket), don't eat it.
- Always apply chemical fertilizers, herbicides, and pesticides according to package directions, if you choose to use them.
- Be aware that garden chemicals pose a threat to children, pets, and beneficial organisms. Store them safely and use them with great caution, if at all.
- Try not use the water on the side of your house. Use well water instead as it is much healthier.

THINGS YOU'LL NEED

- Soil that receives several hours sunlight per day
- Water
- Seeds to plant and/or seedlings to transplant
- Compost or fertilizer
- Mulch <http://www.wikihow.com/Care-for-a-Food-Garden>

HOW TO FIND EDIBLE PLANTS

Have you ever looked around as you walked in the woods and wondered what you could eat if you were really hungry? Many wild plants are edible, but do you know which ones? If you are like most people, you didn't identify much that you knew for sure you could eat. It is to the advantage of all hunters, fishermen, campers and others, to know what is good to eat and how to determine a plants edibility if you are unsure. Any of us who spend any time in the outdoors could one day find ourselves lost, or in a survival situation. Then, our knowledge, or lack of knowledge, of plant life could mean the difference between life and death. Many of the elements of a health diet are found in plant foods.

While many plants are good to eat, there are ways to identify those that you want to stay away from. Any plant with umbrella shaped flowers on it, beans, peas, bulbs, plants that have a milky sap, or plants that irritate your skin, should be avoided. Additionally, stay away from any fungi, unless you know beyond a doubt it is safe to eat. But, even then, fungi add very little in the way of nutrition to your diet. I suggest you spend you time procuring better, more nutritional, items for your outdoor menu. Fungi are **not worth the risk** you can take eating them.

Well, what do you do when you cannot identify a single safe plant to eat? I suppose that will happen more often than not. If you can avoid them, do not eat unknown plants. However, in a survival situation it is often a matter of eating or going hungry. If you decide to eat a plant you are unsure of, there is no better (and proven) method of determining the edibility of plants than using the US Army's Taste Test (along with my comments).

1. Test only one part of the plant at a time. **Comment:** *By eating more than one part you will not be able to determine (if you get ill) what part is safe to eat. Key in one only one part.*
2. Break the plant down into base constituents: leaves, stems, roots, etc. **Comment:** *Once again, it makes identification of safe and unsafe parts of the plant. Not all parts of a plant may be safe to eat.*
3. Smell the plant for strong or acid odors. **Comment:** *Avoid any plant with a strong or acid odor because the plant is considered unsafe to eat.*
4. Do not eat for eight hours **before** starting the test. **Comment:** *This is so you can be sure, if you get ill, it was the plant that caused it.*
5. At first, put a small sample of the plant on the inside of your elbow or on your wrist. Wait 15 minutes and check to see if you had a reaction. **Comment:** *A general rule is if the plant causes a reaction on your skin, it is not safe to eat.*
6. During the test period, **remember** to take nothing orally except pure water and the tested plant. **Comment:** *It you eat or drink anything besides pure water, the test is not valid. And, you will have to start over. It may have been another food that caused an ill effect.*
7. Select a very small piece of the plant to be tested. **Comment:** *Always use a very small piece of the test plant to start with. If the plant makes you ill, the less you*

test with the less the suffering may be.

8. Put the selected piece of the plant up against your lip and test for burning or itching. **Comment:** *If the plant causes any burning, itching or numbness to your lips, DO NOT continue the test. Wash your lips to remove any residue from the plant.*
9. After three minutes, if there is no reaction, place the selected piece of the plant and place it on your tongue. Hold it there for 15 minutes. DO NOT SWALLOW. **Comment:** *While this step sounds easy, I know from experience, it is difficult to do when you are hungry. But, remember, at this point you do not want to swallow an untested plant yet.*
10. If there is no reaction, chew the piece thoroughly and hold it in your mouth for 15 minutes. Once again, DO NOT SWALLOW. **Comment:** *Once again, this is difficult step for someone when they are hungry. Pay close attention to any burning, itching or numbness while chewing the plant.*
11. If there is not irritation at all during this time, swallow the piece of plant. **Comment:** *Be honest about this step. If you have experienced any reaction or irritation during the test up to this step, DO NOT swallow the plant.*
12. Wait eight hours. If you have any effects from the plant, induce vomiting and drink plenty of water. **Comment:** *It is difficult to wait when you are very hungry. However, this is necessary to insure the plant is safe to eat. If you do become ill, flush the system by drinking plenty of water. You may experience diarrhea or stomach cramps from a bad plant.*
13. If you do not experience any ill effects, eat one half of a cup of the same plant prepared the same way. Wait another eight hours; if no ill effects are suffered the plant, as prepared, is safe to eat. **Comment:** *The key here is to always prepare the plant the way you tested it. If you decide to fix it another way, then start the test all over again. Some foods may be safe when eaten cooked but not safe if eaten raw. So, always prepare a plant in a way that you know is safe.*

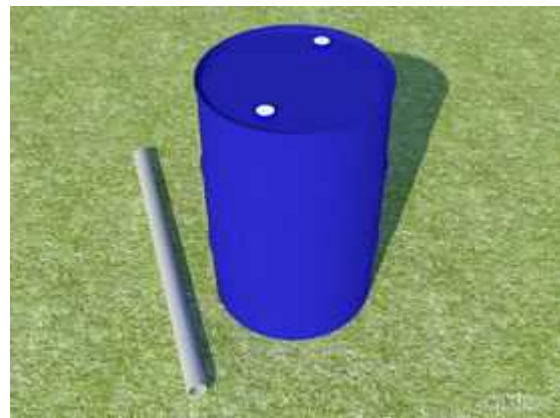
Survival is never easy. We often are forced to make decisions and take chances that can have terrible results if we are wrong. Just by picking up fungi or an unknown plant and eating it, you could die. Survival is no joke and it is extremely dangerous to attempt eating plants you are unsure of. However, hunger is often a constant companion to a survival, but it does not have to be. Many unknown plants are safe to eat and now you have a basic idea of which ones. Always use common sense and the US Army's Taste Test. It could very well save your life.

HOW TO BUILD A TUMBLING COMPOSTER

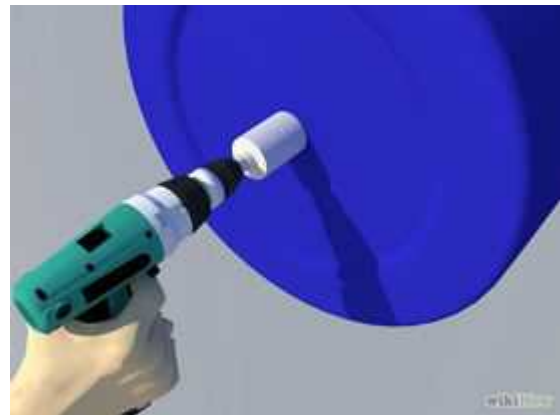
One of the keys to composting is aeration. The bacteria need oxygen to carry out the aerobic respiration that creates rich compost. One way to aerate your compost is with a pitchfork or a compost turning tool. If you keep your compost in a tumbler, however, all you have to do is turn the container. Since most compost barrels can be expensive, you may be interested in building your own for much less money and an hour of your time.

STEPS

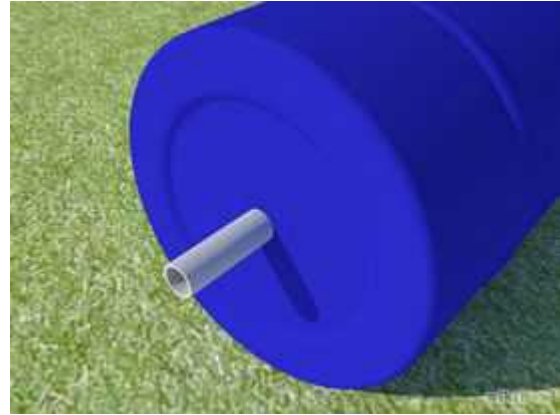
1. **Buy a plastic drum, between 20 and 55 gallons (75-200 liters).** Also obtain a 48 inch (1.25 meter) length of 2 inch (5 cm) schedule 80 PVC pipe, or a length of 1 1/2 to 2 inch (3.8-5 cm) galvanized steel pipe.



2. **Drill holes in the center of the top and bottom of your drum.** They should be large enough for the pipe you are going to use for an axle.



3. **Pass the pipe or post through the center holes.**



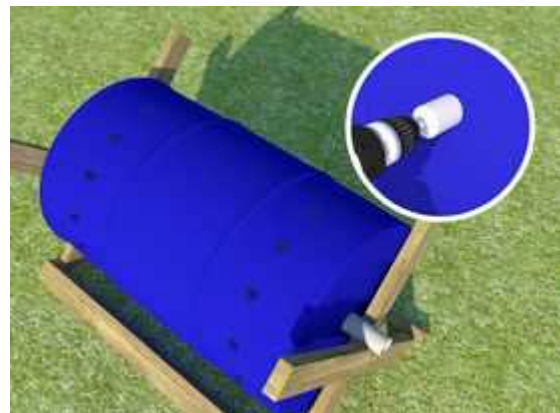
4. **Build a wooden saw buck to support the compost barrel.** Nail 2 sets of 2x4s (pieces of wood that are 1.5! # 3.5! or 38#89 mm in terms of height and width, respectively) in an x-frame, and nail two 2x4s across the feet at the bottom for support.



5. **Set the barrel with the pipe in the wooden 2x4 saw buck.**



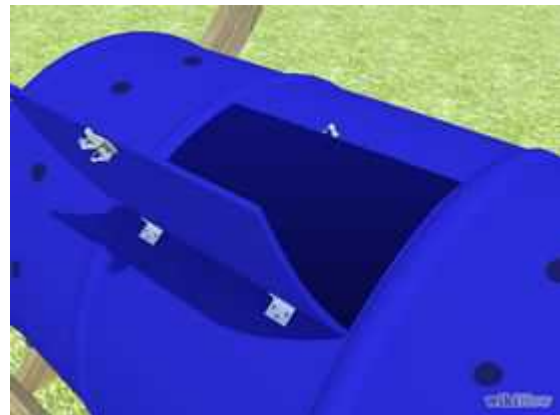
6. **Drill holes in the body of the barrel for aeration.** Use a 1-inch (2.5 cm) bit.



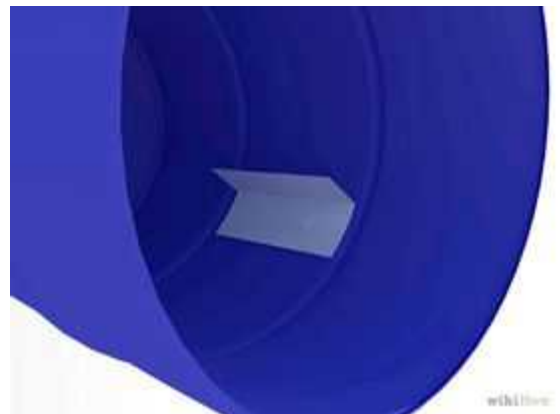
7. **Rotate the barrel in the sawhorse frame using the pipe or post as an axle.**



8. **Cut a hole in the side and add simple hinges and a hasp to create a door with the piece you cut from the side of your drum.** Or, you can simply use scrap wire to create three hinges, and use the same material and an old cabinet knob to effect a way to close the hatch.



9. **Create a mixing fin inside the barrel to help turn the compost when the drum is rotated.** A long spare piece of galvanized sheet metal bent into an L shape and bolted to the interior wall of the barrel will do this nicely. Put the fin opposite from the hatch, so as to weight balance the empty container.



10. **Fill your drum composter with leaves or other compostable material, and allow your new "garden helper" to do its job.** You will want to rotate the drum a few times every day or so, depending on the outdoor temperature.



11. **Check the contents occasionally**, and when they are broken down by the bacteria in the drum, remove them to use for soil amending, mulch, and other purposes around your lawn and garden.



TIPS

- If your barrel is a light color you might consider painting it a dark green, brown, or black. There are paints like Krylon that work particularly well on plastic. The dark color will absorb light and raise the temperature of your compost.
- If the contents of the drum are very dry, moistening them will accelerate the composting process, but do not saturate them with water.
- If you would like to add a handle to help you turn the barrel, drill a 1" (2.5 cm) hole all the way through one end of the pipe. Slide a piece of rebar or other round steel tubing that is 1" (2.5 cm) in diameter through the holes. The rebar should be about 2' (60cm) long. Center it so that you now have two handles on the end of the pipe and can grasp them to turn the barrel. You can cover them with pipe insulation for an easier grip.
- Composting (decomposing) occurs more quickly in warm weather.
- You could also build the tumbler on a diagonal axis (enough to create a slope) and put a plug in the bottom of the drum, which would allow you to add water that will help the decomposition and create a liquid fertilizer when drained from the drum.

- Warnings

- Filling your composter with green (fresh cut) lawn trimmings or other material may cause it to generate too much heat, in which case it may begin to smolder, if the container is not rotated occasionally.
- You may need to add supports for the barrel if you're using a plastic drum, otherwise the barrel may rip off of the axle.

- Things You'll Need

- One 20-55 gallon (72-200 liter) plastic drum.
- One 48 inch (1.25 meter) length of pipe with a 2 inch diameter (5 centimeter).
- 2X4 treated lumber.
- Nails
- Circular saw.
- Drill motor, hole saw, and drill bits.
- Basic hand tools. (hammer, measuring tape, square)
- Hinges

<http://www.wikihow.com/Build-a-Tumbling-Composter>

FIRE STARTING

[How To Make A Fire Without Matches Or A Lighter](#)

[Emergency Fires](#)

[Types Of Campfires](#)

[How To Make A Fire Starting Kit](#)

[Tricks Of Making A Fire](#)

[How To Make Fuel For Home Survival](#)

[How To Make Tinder For A Fire](#)

[How To Make A Fire Drill](#)

[How To Season Firewood](#)

[The Dakota Fire Hole](#)

[Fire Tricks](#)

HOW TO MAKE FIRE WITHOUT MATCHES OR A LIGHTER

Being able to start a fire is an essential tool for surviving in the wilderness. When someone in your camping group drops the matches into the river or the lighter gets lost along the way, you may need to know how to start a fire using natural or household objects to create friction or magnify the sun. Learn how to start a fire without using matches or a lighter by reading the methods below.

STEPS

- *Getting Started*

1. **Learn how to [make tinder for a fire](#) and have your tinder nest ready.** For all of the methods below, you will need a tinder nest to nurture the sparks and/or embers you create into a flame.
2. **Gather dry wood.** In order to create friction and maintain a flame, you will need to use extremely dry wood.

- *Using Batteries and Steel Wool*

1. **Make a tinder nest out of any dry plant material that easily catches fire.** You can use dry grass, leaves, small sticks, and bark. This nest will be used to create a flame out of the spark you create with the battery and steel wool.
2. **Find a battery and locate the battery terminals.** The terminals are the two circular receiving prongs located on the top of the battery. • Any battery voltage will work, but 9-volt batteries will ignite the quickest.
3. **Take your steel wool and rub it on the battery terminals.** The finer the steel wool, the better for this process.
4. **Continue to create friction by rubbing the steel wool on the batteries.** This process works by creating a current through the tiny steel wires that then heat up and ignite.
 - Another way to do this is to take a 9-volt battery and a metal paperclip and rub the paperclip on both battery terminals at the same time to create sparks. This is similar to how the wires in light bulbs and toasters ovens operate.
5. **Blow gently on the steel wool as it starts to glow.** This helps nurture the flame and encourages it to spread.



6. **Once the steel wool is glowing brightly, transfer the steel wool to your tinder nest quickly, continuing to blow lightly on the nest until the tinder ignites, creating a flame.**
7. **Add increasingly larger pieces of dry wood to build your fire once the tinder nest has ignited into a flame and enjoy your fire!**

USING FLINT AND STEEL

1. **Again, build a tinder nest using dry plant material.**
2. **Take your flint rock (a rock that emits sparks) and hold it between your thumb and forefinger.** Allow about two or three inches of flint to extend past your grasp.
3. **Grab a piece of char cloth between your thumb and the flint.** Char cloths are small squares of cloth that have been turned into easily combustible charcoal pieces. If you do not have any char cloth on hand, you can also use lightweight tree fungus.
4. **Take the back of a steel striker or the back of a knife blade (depending on which you have handy) and quickly scrape the steel against the flint.** Continue to strike until sparks begin to form.
5. **Catch the sparks with your char cloth and continue the process until the cloth glows like an ember.** Char cloths are specially designed to hold a glow without catching fire.
6. **Transfer the glowing char cloth to your tinder nest and gently blow on it to induce a flame.**
7. **Begin to add increasingly larger pieces of wood to grow your flame into a fire.**

USING A MAGNIFYING GLASS

1. **Notice whether or not there is enough sunlight to create a fire using this method.** You generally need the sun to be unobstructed by clouds in order to utilize it with your magnifying glass.
 - If you do not have a magnifying glass, eye glass lenses and binocular lenses work as well.
 - Adding water to the lens allows you to create a more intense, focused beam of light.
2. **Build a tinder nest out of dry material and set it on the ground.**
3. **Tilt the lens toward the sun until the lens creates a small circle of focused light on the tinder nest.** You'll probably have to test out holding the lens at different angles to create the most focused beam of light possible.
4. **Hold the lens in place until the tinder begins to smoke and flame.** Blow lightly on the tinder nest to nurture the flame.
5. **Begin to add increasingly larger pieces of dry wood to your tinder nest to create the fire size you desire.**

FASHIONING A HAND DRILL

1. **Build a tinder nest out of any dry plant material.** Again, be sure that the material can catch fire easily.
2. **Find a piece of wood to use as the base of your hand drill, otherwise known as a fire board.** You will drill on this wood piece to create friction.
3. **Use a knife or any sharp object to cut a small, V-shaped notch in the center of your fire board.** Make sure that your notch is just big enough to hold your spindle stick.
4. **Place small pieces of bark underneath the notch.** The bark will be used to catch an ember from the friction between the spindle and fire board.
5. **Take your spindle stick, which should be a thin stick about two feet long and half an inch in diameter, and place it in the V-shaped notch in the center of your fire board.**
6. **Hold the spindle stick between your two flat palms and begin to roll the spindle back and forth.** Be sure to push the spindle stick firmly down into the fire board.
7. **Continue to roll the spindle quickly between your hands, pushing one hand forward and then the other, until an ember is formed on the fire board.**
8. **Transfer the glowing embers to a small piece of bark.** You should have already placed a few small pieces of bark next to the notch for this purpose.
9. **Place the bark containing the ember onto your tinder nest.** Continue to blow gently on the tinder nest to fully transfer the ember and create a flame.
10. **Begin to add increasingly larger pieces of wood to maintain a larger fire.** Be advised that this method takes a while to create a fire, and requires physical as well as mental determination.

MAKING A BOW DRILL

1. **Again, make a tinder nest.** Use any dry plant material you can gather.
2. **Find an object to use as a socket such as a stone or a heavy piece of wood.** The socket will be used to put pressure on the spindle.
3. **Find a long, flexible piece of wood about the length of your arm.** It is best if this piece of wood has a slight curve in it. This will serve as the handle of your bow.
4. **Make the string of the bow using any strong, abrasive material that can withstand a lot of friction.** You might want to use a shoelace, a thin rope or string, or a strip of rawhide.
5. **Tie the string as tight as possible to each end of the bow handle.** If there are not already natural notches in the bow wood to anchor the string, whittle small, straight notches into the wood in order to act as a groove for the string.
6. **Find a piece of wood to use as the base of your hand drill, otherwise known as a fire board, and cut a small V-shaped notch into the center using a knife or other sharp object.**

7. **Place your tinder nest underneath the V-shaped notch.** You want to have the tinder right next to base of the spindle so that you can easily create flames.
8. **Loop the bow string around your spindle stick one time.** Make sure you do so in the middle of the bow string to create enough space to roll the string back and forth.
9. **Place one end of the spindle in the V-shaped notch in your fire board and then stack the socket on the top end of the spindle.** Hold the socket with your non-dominant hand.
10. **Begin sawing the bow quickly back and forth, holding the curved, wooden part of the bow in your dominant hand.** This will cause the spindle to spin (hence the name "spindle") and create heat at the base of the fire board.
11. **Continue to saw back and forth until you create an ember where the spindle meets the fire board.** Make sure your tinder nest is close by.
12. **Gather the ember you created onto a piece of scrap wood and drop it into your tinder nest.** You may just be able to slide the ember off of the fire board into your tinder nest.
13. **Blow on your tinder nest as you gradually add increasingly larger pieces of dry wood to create a fire.**

Tips

- Nurturing an ember or spark into a flame is the most difficult part of starting a fire. Be sure to blow gently during this step.
- Cottonwood, juniper, aspen, willow, cedar, cypress, and walnut are ideal materials for creating your fire board and spindle sets.
- You should know how to [Extinguish a Fire at the Initial Stages](#), [Report a Fire](#) and/or [Put out a Fire](#) before attempting to build one.
- Make sure the wood is extremely dry before attempting any friction methods.
- The hand drill method is the most primitive and difficult method, but requires the least amount of materials.
- If you don't have any sort of lens to complete the magnifying method, you can also fill a balloon with water and squeeze it until it funnels light in a small beam or shape a piece of ice into the shape of a lens.

Warnings

- Always remember to be [careful when dealing with fire](#).
- Be sure to put out your fire using water or by smothering it with sand or dirt before leaving the fire site unattended.
- Be aware of sparks and embers that may fly off when creating friction.

THINGS YOU'LL NEED

- **For the Battery and Steel Wool Method**
 1. Steel wool (or a paper clip)
 2. A battery
 3. Tinder nest

4. Dry wood
- **For the Flint and Steel Method**
 1. A Flint
 2. Steel
 3. Char cloth
 4. Tinder nest
 5. Dry wood
- **For the Magnifying Glass Method**
 1. Tinder nest
 2. Magnifying lens or other useful lens
 3. Water (optional)
 4. Dry wood
- **For the Hand Drill Method**
 1. Spindle stick
 2. Fire board
 3. Knife or sharp object
 4. Small bark pieces
 5. Tinder nest
 6. Dry wood
- **For the Bow Drill Method**
 1. Tinder nest
 2. Spindle stick
 3. Fire board
 4. Knife or sharp object
 5. Small bark pieces
 6. Socket
 7. Bow
 8. String
 9. Dry wood

<http://www.wikihow.com/Make-Fire-Without-Matches-or-a-Lighter>

HOW TO MAKE A FIRE STARTING KIT

This article will show you how to put together a compact fire starting kit for camping or survival.

STEPS

1. **Collect the items needed for this project.** These are listed below under "Things You'll Need".



2. **Cover your workspace.** While optional, this makes it a cleaner way to work, especially as you will be working with dripping wax.



3. **Waterproof matches about 50 or so.**
Do this as follows:
 - Light the candle and let the wax melt a little.
 - Dip a match into the wax; be careful not to light the match in the flame.
 - Let the wax dry on the red part of the match.



4. **Make some tinder.** Soak the cotton balls in the alcohol and let them dry.



5. **Put a tissue in the bottom of the container.** Put the matches on one side. Then, put the cotton balls in the bag, roll the baggie up, and push into the case.



6. **Include a small piece of sandpaper.** This will be used to strike each match.



7. **Wrap the edge of the case where the tin closes with electrical tape.** The fire starting kit is all set to go.



Non-SAW MATCHES METHOD

1. **Remove the striker from the box of kitchen matches, fold & include in kit.** If your matches are not the "strike anywhere" kind, this striker will be required to provide the second half of the two-part match/striker system. As opposed to the sandpaper used above, this striker is NOT just a friction source. It is half of a two part chlorate / phosphorus ignition system.
2. **Finished.**

Tips

- For best results work a small amount of petroleum jelly into the dryer lint.
- Matches are fine, but stick a "Bic"-type lighter in too.
- Wrap another piece of electricians tape around the middle of the can also, to re-wrap the kit if needed.
- You can prepare chemical fire starter by packing a small bottle of glycerin and some potassium permanganate, mix the two ingredients when you need to start a fire. Powdered glucose works as a replacement for glycerin.
- There are many magnesium based fire camp fire starters such as Swedish Firesteel - google magnesium fire starters to shop for options. In use, they ignite magnesium shavings which will burn in any conditions.
- Also, a small bag of Fritos chips works well for an easy tinder in damp conditions and burns easy and long.
- Cotton balls with petroleum jelly worked into them tend to burn very well and last long enough to light damp tinder.
- Dryer lint can also be collected and used instead of the cotton balls for tinder. Don't compact the tinder too much.

Warnings

- Always be cautious around fire.

THINGS YOU'LL NEED

- A box of large diamond kitchen matches
- Tea light candle
- Ziplock baggie
- Cotton balls (2 or 3 is all you need)
- Rubbing alcohol
- Petroleum jelly
- Tissues (3 or 4)
- Small piece of sandpaper; small enough to fit in your tin or plastic tub
- Some sort of tin or plastic tub (Altoids tins work best)
- Electrical tape

<http://www.wikihow.com/Make-a-Fire-Starting-Kit>

HOW TO MAKE TINDER FOR A FIRE

Whether you're stranded in the woods in the middle of the night in desperate need of heat, or simply trying to impress your friends with your top-notch Boy Scouts skills, finding and making dry tinder to start your fire can be tricky. The key to making your own tinder is finding small bits of easily combustible, dry material that can be nurtured into a larger flame or can transfer heat to a burning coal.

STEPS

FINDING DRY TINDER IN NATURE

1. **Break or chop off chunks of tree bark.** The type of tree will vary depending on your location, but the most important characteristic of the bark is that it is dry. Break off the inner bark and shred or break it into small strips or chips, depending on the strength of the wood.
 - Peel off strips of **cedar bark**. You can spot a cedar tree by its reddish-brown fibrous bark that is easy to shred with your hands.
 - Cut off a chunk of **cottonwood bark** with whatever sharp tool you have and whittle away the outer bark until you can see the cord-like strands on the inside. Cottonwood bark has a soft characteristic that can, like cedar bark, be stripped into small pieces. [\[1\]](#)
2. **Search near bodies of slow-moving water for cattails, sometimes called bullrushes.** Cattails are common throughout Europe and America and are abundant around swamps and ponds.
 - You want to use the bushy, cotton-like material on the top of the stem which flourishes in the fall as the plant goes to seed. Simply snap it off and ignite.
 - In mid to late summer, cattails bloom into a brown sausage-shaped substance on the top of the cattail. This part of the plant works for tinder as well. Snap it off and break or cut it open to get to the driest material possible. [\[2\]](#)
3. **Locate trees with patches of tinder fungus, a specific growth that works excellently as tinder.** Cut off a large piece and break it into smaller chunks if it is sufficiently dry.
 - Tinder fungus predominantly grows on birch trees, which can be identified by their white bark, and has the appearance of a chunk of burnt or blackened crusty bark.
 - If the material is wet, you can slowly air-dry the fungus over time for later use. [\[3\]](#)
4. **Whittle bamboo reeds into thin shavings.**
 - Holding a knife at a right angle with the blade pointing away from your body, run the blade back and forth to create small shavings. Your shavings should look similar to sawdust.

5. **Gather other plant materials in nature.** In a pinch, almost any dry plant material can be used as tinder. This includes dry grass, leaves, sticks, dry pine needles, cotton fabric, or natural twine or rope. These may not be the easiest materials to ignite, but they will kindle a fire in desperate situations.

USING SYNTHETIC MATERIAL

1. **Make char cloth squares using pieces of cotton fabric.** This material is an invaluable resource to take with you when you venture into the outdoors.
 - Place several small squares (about one square inch in size) of cotton fabric into an airtight container that can withstand heat, such as a metal water bottle.
 - Set the container atop an already flaming fire for about five minutes.
 - Remove the container from the fire using tongs and allow to cool.
 - Open the container and observe the squares. They should be blackened in color.[\[1\]](#)
2. **Purchase steel wool from a supermarket or hardware store.** The steel wool you use to scour your pots can be excellent tinder and all you have to do is light it.
3. **Collect dryer lint from the screen in your clothes dryer.** Finally, that annoying lint that you have to clean out of your dryer every time you put in a new load has a use! Simply collect enough lint to form it into a long rod-shaped mold and ignite.
4. **Soak cotton balls in petroleum jelly and store them in an airtight container.** The petroleum grease ignites extremely easily.
5. **Tear up whatever paper products are available to you into long shreds.** A rolled-up newspaper, the cover of a paperback novel, or whatever paper material is available to you will help get a fire started. While you wouldn't want to turn your map into tinder, any spare paper can work to ignite a fire, though it requires more patience than some of the other methods.

Tips

- Fluff or shred materials. This will make it easier for the flame to get access to the most area of combustible material.
- Once you ignite your tinder using waterproof matches or a lighter, make sure to kindle the flame by blowing steadily on the material until it glows bright red and becomes a coal. This allows you to sustain heat and transfer the glowing coal into a burning flame when added to larger logs of wood.
- Keep your tinder dry. Good tinder can save your life in the wilderness, especially in wet weather. When you have a good supply of tinder, secure it in a waterproof container, such as a small container found at most outdoor supply stores. Ziplock bags are not waterproof!
- Choose freezer grade ziplock bags--they are thicker than sandwich ziplock bags and are more effective at keeping water out than regular Ziplock baggies.
- Stock up on other easy to find tinder storage containers such as aluminum water bottles, old cough-drop boxes, small snack-sized food storage containers and

- travel toothbrush containers.
- Cotton wool covered in petroleum jelly also works well.

Warnings

- Whenever dealing with fire, be sure to use caution to prevent accident or injury.
- Always tend fires responsibly, and as prescribed by authorities, on all public lands.
- Make sure to put out your fire properly when you are finished with it by smothering it with sand or water.
- Make sure you are legally allowed to start a fire in the wilderness. Certain conditions may warrant a fire ban.

<http://www.wikihow.com/Make-Tinder-for-a-Fire>

THE DAKOTA FIRE HOLE

July 15, 2011 | Filed under: [fire,important skills,survival](#) | Posted by: [Ron Fontaine](#)A little known survival aid related to wilderness [fire making skills](#) is the Dakota Fire Hole, also known as the Dakota Fire Pit. This handy device is easy to construct and has marked advantages over other types of camp fire constructs. Once you make a Dakota fire hole and try it out, you may choose to use this method on a regular basis.

MAKING A DAKOTA FIRE HOLE

To make a Dakota Fire Hole first remove a plug of soil about 12 inches in diameter and dig down one foot.

Making a Dakota Fire Hole is initially more labor intensive than simply building a fire on the surface of the ground. However the outlay in energy required to make a Dakota fire hole is more than offset by its efficient consumption of fuel; it greatly reduces the amount of firewood required to cook meals, [treat water to destroy pathogens, or w](#)arm your body.

The Dakota fire hole is a valuable wilderness survival aid because it burns fuel more efficiently, producing hotter fires with less wood. In many areas firewood is scarce or requires a large amount of time and expenditure of energy in foraging to obtain it. Once you build a fire, efforts are better spent attending to your other wilderness survival needs rather than in the constant gathering of firewood. Other advantages of the Dakota fire hole are that it creates a kind of woodstove with a stable platform that is very convenient to cook over.

Should you need to conceal your fire, the fire hole will limit the amount of visible smoke that rises from the fire, since the fuel wood is burning hotter and more efficiently. The pit will also help conceal the light emitted from your fire, especially at night when even a single candle flame can be seen from miles away.

WHERE TO BUILD A DAKOTA FIRE HOLE

Before you start to dig your Dakota fire hole you should scout out an area where soil conditions are conducive to its proper construction. You will want to avoid areas

- that are rocky and difficult to dig.
- with thick tree roots that require cutting.
- that are wet or where a dug hole will fill with water.
- With soil conditions such as dry loose sand that will not hold shape as it is dug into.

The usual requirements related to general fire craft and care always apply. As always, treat the wilderness areas you enjoy and count on to survive with respect. Be sure you

do not make a Dakota Fire Hole in conditions where out of control wild fires are a possibility and avoid ecologically sensitive areas. Try not to injure the roots of trees and plants.

Follow local ordinances regarding the making of fires; these rules are in place for good reason.

MAKING A DAKOTA FIRE HOLE

Now that we have the introduction taken care of, we can make a Dakota Fire Hole. As shown in the picture, I am using an army folding shovel to dig with. Many wilderness survivors carry a small hand trowel for the [burying of human wastes](#) and this also works well. A strong stick or part from your mess kit can also be utilized for digging holes in a pinch; survival experts are experts at innovation so use whatever means you have available.

1. **Making the Fire Pit Chamber** Having selected a likely area in which to dig the fire hole, first remove a plug of soil and plant roots in the form of a circle about 10 or 12 inches in diameter. Continue digging straight down to a depth of about one-foot being sure to save the plug and the soil you removed for replacement later on. This part of the Dakota fire hole will serve as the main chamber that contains the fire. I prefer to extend the base of the fire chamber outward a couple of inches in all directions so that it can accommodate longer pieces of firewood. This saves time and energy in breaking up firewood into suitable lengths, and also has the effect of allowing larger and therefore hotter fires.
2. **Making the Airway** Starting about one-foot away from the edge of the fire pit, dig a 6-inch diameter air tunnel at an angle so that it intersects with the base of the fire pit. The prevailing wind is moving from in back of me in the upper left corner of the picture. The effect is a jug-shaped hole at the base of which you place firewood. The neck of the jug will serve as a chimney of sorts the function of which is to increase the draft and concentrate the heat of the fire into the small opening.
3. **Making the Fire Hole Airway** Now comes the key component of the Dakota hole that makes this fire making method so effective; the airway. Before you start on the airway tunnel, determine the general direction of the wind. If the wind is too light to easily ascertain its direction you can often lick a finger and hold it up, being sure it is away from any obstructions. Evaporative cooling on one side or the other of your appendage will be felt from which direction the wind, however light, is blowing. That is the side of the fire hole on which to construct the airway. Dig a 6-inch diameter airway tunnel starting about one foot away from the edge of the fire hole. Angle its construction so that the tunnel intersects with the base of the fire chamber as shown in the diagram and picture. As when you made the fire hole section, be sure to save the plug containing the vegetation and roots as well as the loose soil you remove.
4. **Using the Dakota Fire Hole** Now that the Dakota Fire Hole is properly constructed, you can partially fill the fire pit chamber with dry combustible kindling materials and light the fire.

To start the fire I am using a [FireSteel](#), the kind Survival Topics highly recommends to be included in every survival kit. These firesteels from [FireSteel.com](#) work even when wet and will literally light thousands of fires before wearing out – try doing that with matches or a lighter! We sell high quality Firesteels at the lowest prices in the [Survival Supplies](#) section of this website. Help support this website and buy them here – I guarantee a quality product.

- Light the Fire

Using a Survival Topics firesteel I am lighting the fire. These firesteels always work, no matter how wet the conditions. Able to start thousands of fires, you can buy your own firesteels at the Survival Topics [Survival Supply](#) store. Once the flame is going strong, drop it into the fire pit so that it catches the kindling on fire; gradually add sticks so that a strong hot fire is maintained.

- How a Dakota Fire Hole Works

The accompanying diagram shows the secret of what makes the Dakota Firehole so effective. As the fire burns, the hot air that is created goes up through the fire hole “chimney”. This creates a suction action that forcefully draws air down through the tunnel and into the base of the fire. The draft is increased even more by your having constructed the tunnel on the side from which the prevailing wind is coming. Acting as a kind of bellows, the flames are continuously fanned and the fire burns hotter and more efficiently than a fire that is simply made on the surface to the ground. Hotter fires mean less smoke. In addition, the heat of the fire is concentrated into an upward direction where you can better capture it for use. This allows you to do more with less wood – an excellent survival fire by any measure.

- Fire Hole Improvements

Once you have made the Dakota fire hole you can easily set up a cooking surface for pots and pans by laying several parallel green sticks across the fire pit as show in the picture. Lacking camp cooking gear you can also find a flat rock that only partially covers the hole – and use it as a sort of hobo frying pan. It is also an easy matter to set a “Y” shaped stick into the ground onto which is rested a green pole with bannock dough, fish, or other outdoor meal. For more information on the wilderness survival staple known as bannock read the Survival Topic on [How to Make Bannock](#).

- Dakota Fire Pit Diagram

This is how a Dakota Fire Hole works. As hot air from the fire exits through the top of the fire pit, a suction is created that draws fresh air down through the tunnel and into the base of the fire. This brings in plenty of fresh oxygen for combustion. A cycle develops: The hotter the fire gets, the more air is drawn down into the fire pit – making the fire hotter.

When it is time to leave the area, be a responsible wilderness survivor who values the land you need for survival. Fill in the Dakota fire hole with the dirt you removed and saved when you were constructing it. Then replace the cap of vegetation. Doing so serves the double purpose of extinguishing the fire and leaving as little trace of your visit as possible.

In summary, the main advantages of using a Dakota Fire Hole include:

- burns hotter
- with less fuel
- producing less smoke
- less light visible to those you do not want to find you
- providing a stable cooking surface
- easy extinguishing of the fire
- and removal of evidence you have been there when you are preparing to leave.

There can be no doubt, making the Dakota Fire Hole one of the best types of survival fires you can make when surviving in the wilderness.

EMERGENCY FIRES

At times we must use emergency methods of starting a fire in order to survive. These methods can be extremely dangerous and should only be done in life and death situations.

The man looked around and shivered. He was cold. Then wind was strong and seemed to cut through his coat like a knife. He knew that he had to have a fire, or he would soon be dead. He kneeled and scraped the making of a fire together. He lit the first match, but the wind blew it out. He only had one more match and knew his very life depended on the ability to start a fire. "What will I do if this match did not start the fire?" the man asked himself. He struck the match and lowered it to the kindling with a trembling hand. As the kindling flared up and then died, he knew the answer to his question, he knew he would die.

While the introduction to this article is make believe, it could happen. And, sadly, it most likely has happened at some point in the past. Most of us are not very good at starting fires, even when we have the best kindling and dry wood. Just imagine how hard it would be with a high wind, heavy rain, or snow to compound the difficulty. I suggest you always carry at least three methods of starting fires, matches, a magnesium match, and flint and steel. I recently added a disposable lighter to my survival it as well. Why so many methods of starting a fire? First, these are by far the easiest ways to light a fire, and second, the alternatives are difficult for most of us.

Some of the alternate methods of fires starting involve friction, the sun, or the use of more primitive methods when compared to matches or lighters. Lets look at friction first.

The most common method of starting a fire through the use of friction is by making a fire bow (see the illustration). It is, however, one of the most difficult methods for most people to use. You need a piece of hardwood, with a socket in it, for the top, a bow (the cord may be a shoe lace, rope, thong, or whatever you have), a spindle (a piece of straight hardwood) and a piece of softwood for the base. As you spin the spindle, a dark (almost black) dust starts to fall on the base. If you move fast enough and with enough pressure, this black dust will ignite into a very small smoking ember. The fire

is so small you may just see the smoke. However, if you gently blow on it, flames will appear. This method is difficult because the pressure must be maintained and the spindle must be rotated at an even and continuous rate. I recommend it as a last resort for most people, because it is not as easy as it sounds.

Another method of starting a fire is by using glass. Any convex lens (an outward bulge) may be used. It can come from a camera, a magnifying glass, binocular, telescope, or even a flashlight. All you have to do is hold the lens so that the sun's rays are concentrated on your tinder. This method is simple and most kids know how to do this. You can buy a cheap magnifying glass and carry it in your survival kit. They cost less than a buck.

Flint and steel is my preferred method of starting a fire. I usually just save the matches for a real emergency. I like the ease of use and the speed of which it works. All you need is flint and steel. Flint can even be found in nature's back yard. I have used sparking stones that were not flint to start a fire, but they do take longer. However, commercial flint and steel kits work as easily as a lighter. You take the striking rod (or a knife blade) and run it down the flint. Small pieces of flint will then fall into your tinder and ignite it. The whole system is very simple and very easy to use. Everyone should carry flint and steel. A secret here, if you bring dried lint from your dryer with you, one spark from the flint and steel and you will have a flame. Simple and easy.

Alternate methods of starting a fire are there, but they can be dangerous to attempt. However, in a survival situation, you must consider the need for a fire and then weigh the risks involved. The choice is up to the survivor and decision must be made with a full understanding that injury or death could occur. Some flammables, like gasoline or gunpowder are very unstable and are hazardous to use. Nonetheless, there may come a point where a survivor must decide. No one else can decide for you, not take the responsibility if things go wrong.

- Gasoline can be mixed with sand and burned, but use extreme caution at all times when using this method. The fuel mixed with the sand is very dangerous to light and should be done by throwing a flame onto the container. Make sure you are not down wind when you ignite a mixture of sand and gasoline. Also, the flames will often flare up when the sand and fuel is stirred with a stick. I have seen this mixture appear to be burned out, but a slight stirring with a stick would bring a low "whump" and the flames would once more be visible. Use this method only as a last resort and in life or death situations of extreme cold. I do not suggest it to be used in any other situation.
- Oil can be burned as well. While it is more difficult to start burning than gasoline, it is very effective when used in signaling. When it burns it gives off a very dark and dense black smoke, which is visible for miles. It should also be mixed with sand to use more safely. Using it with a normal campfire difficult because if it is just poured on the coals it will smoke and not ignite immediately, most of the time. As when you are using gasoline, exercise extreme caution when using oil. Fuels and oils are not to be taken lightly when used in fires. They can injure or even kill you, if used carelessly.

- A fire can also be started using a “C” cell flashlight battery and steel wool. I recommend you wear gloves when using this method of fire starting. Take the steel wool and pull it out so it is hanging loosely and is not lumped. Pull the strands apart to allow space for air to flow between the steel wool fibers. Place lint, small shavings of wood, or dried grasses on the wool, at the exact center point. The next step is to place the two ends (opposite ends) of the steel wool on the battery terminals (+ and – posts). Make sure you have nothing but your fire starting material in the middle or center of the steel wool, because it will start to glow. Ignition is easy once the wool glows.
- Another method of starting a fire involves the use of your car battery. If you are stranded you may be able, if your car has one, to use the cigarette lighter. Just make sure you use very fine paper (toilet paper works well) to ignite with the lighter. I have discovered the glow does not last very long and thick pieces of paper or wood are very difficult to light. Use the thinnest paper you can find.
- Additionally, if you have jumper cables you can arch them to make a spark. This method is very dangerous, because it involves the use of gasoline. Mix a small amount of gasoline, less than a teaspoon, with your tender. Wait a few seconds for the air and fuel to mix. You should have already removed the vehicle battery and place it near the tender, as far away as your jumper cables will allow. Connect the cables properly at the battery terminals, making sure the opposite ends of the cable are not touching. Then, very carefully, pick up the two ends of the unattached cable. Holding the clamps of the cables (on the unattached end of the cable) touch them together about four inches above the tender. The fire should start almost immediately. Be prepared for a sudden flare-up of flame as the fuel/air mixture ignites. Once the kindling is burning, add small sticks until the fire is burning well. The gradually add larger and larger pieces of dry wood. This method of fire starting can be very dangerous and should only be attempted in true life and death situations.
- If you have weapon with you a fire can be started very quickly. We have all seen the movies where a man starts a fire by shooting into his kindling. Well, maybe it can be done that way, but I have never seen happen. First, it is dangerous to shoot a bullet into your kindling, and second, the blast from the weapon will most likely scatter your kindling. You can, however, use the powder from the bullet to start a fire. It is dangerous to do, but once again, it can be done when a fire means life or death. The bullet must be removed from the shell, which is dangerous, and the gunpowder sprinkled on your kindling. This gunpowder will flare up and burn from the slightest spark. While this method works, once again, remember it is very dangerous to use.

Now, before you ever attempt any method of fire starting, always have your tender and fuel nearby. Lint, bird nests, fire sticks, or other materials should be in place before you attempt to start the fire. Pine pitch, a sticky substance growing on the bark of pines or other evergreens, will aid your fire making. Make sure you have enough fuel to feed the fire once it starts, you may not get a second chance. Ensure that all tender is bone dry and dead wood. Green wood or wet wood will be harder to start. Plus, it gives off more smoke.

The methods explained in this article may be very hazardous for you to attempt. I do not suggest that you go out and try them. I am only offering ways to start a fire without matches or lighters in an extremely serious situation. These methods may be very dangerous and should only be attempted in a life and death case. Serious injury or death can occur when attempting emergency fire making techniques. Neither I, nor the publisher of this article, accept any responsibility for any injuries or death that result from the use of these procedures. The methods discussed here are for use only when the survivor has no choice, except to die.

TRICKS OF MAKING A FIRE

All of us who hunt, fish, backpack or hike, will one day need a fire. Most of the time we just stop, clear an area and start a fire without much thought. While that is all right most of the time, do you know how to really make a fire? Oh, I am not talking about the method you use to ignite the fire, I mean the components needed for a good fire, some of the types of fires, and even heat reflectors. They are pretty simple to make and all serve different needs in the woods.

The first aspect of making a fire, besides the ignition source, is tinder, kindling, and fuel. Let's look at tinder first. Tinder should be small, shredded, or finely shaven pieces of material. You can use birch bark (it contains a resinous material that will burn hot), dried grass, wood shavings, pine pitch (has a resinous material in it too), down from birds, charred cotton material, or lint. You want low ignition heat so keep the material you use fluffed up to allow lots of oxygen flow as you ignite it. You can also coat some parts of your tinder with Vaseline, Chap Stick, or insect repellent to make it burn hotter once lighted. Once the tinder has been ignited, you slowly add the kindling.

Kindling is small pieces of material you have decided to use for your fire. I suggest squaw wood, which are the small dead pieces of wood (limbs if you will) found on most trees at the lower levels. This wood is often found on live trees as well. It is usually dry if found on the lower levels of a large tree. The upper limbs keep the rain or snow off of it. But, you can use small twigs and branches found on the ground. Just make sure any woods you select are dead and dry. This is important for your kindling. Also, remember, you want small pieces not large ones. You want kindling in a variety of sized and thickness. This is so you can gradually increase the size of the wood to increase the size of your fire. If you place a piece of kindling on your tender that is too big, the fire may go out. Slowly increase the wood size. Try to use soft woods for your kindling, if possible. Soft woods burn fast and give off sparks. This unique trait of softwoods will assist your kindling in burning better and hotter.

Fuel is just about anything you can burn. Animal dung, from plant eaters, can be burned, fuels, oils, animal fats, and even most woods. Wet wood should be placed near the fire to at least partially dry out before being added to the fire. In wet weather, stumps, logs, or limbs may be broken open and the inner pieces of wood removed to add to your fire. This inner wood will be at least partially dry. Keep in mind, soft woods will burn fast, give off sparks, and may be an excellent source to start with. Some soft woods are spruce, pine, cedar, or willow.

Now, some hints to make your fire making easier. Pick up dead wood around your site. There is usually more than enough wood on the ground in most areas. I suggest you avoid chopping wood, especially in a survival situation, because it takes too much energy. You should not do any work in a survival situation that is not absolutely necessary. Save your strength. Also, by carrying a small candle you can start a fire very quickly. Just pile your tinder around it and you simply light the wick. You can hold

a small piece of tinder over the candle flame to ignite it, then place the burning tender up against the base of your stacked tinder. A fire will usually start, if your tinder is dry and dead, within a few seconds. Then, slowly add large and larger pieces of fuel to the flames. Use caution here and do not get in a hurry and place fuel that is too large on the fire, it may go out. You must be patient and allow the fire to grow in size very slowly.

There are many different styles of campfires you can make. Here are just a few.

- Teepee fire, used when you need a concentrated light source, heat, or coals for cooking with.
- Pyramid fire, best for excellent way of drying wood, needed light, and it produces good coals for cooking on.
- Log Cabin fire is another good source of light and heat. It also is a very good fire to use when making fire signals or when you need to dry damp wood.
- Star fire, is easy to use and it conserves your fuel. It is used usually when you want a small fire.
- Long fire, is good for cooking. You first dig a trench, no less than 6 inches wide, and then place two large logs (green wood is the best) on both sides of the trench. You can place your cooking utensils on the logs to do your cooking. Remember to cook on hot coals, not open flame.
- “T” fire is a good all around fire. You can place your campfire in the top part of the “T” and your cooking coals on the long part of the “T”. You should not make the long part of the “T” wider than your cooking pot or pan. This is so it can rest on the soil on both sides of the trench.
- Key Hole fire is another excellent cooking fire. Your fire is in the whole part of the fire pit, with the coals in the long trench. Make sure you only cook on coals and not flames in the trench. Your pots or pans will rest on the sides of the trench as you cook.
- Dakota Hole fire, this fire is a lot of work. You must first dig a hole, approximately 10 to 12 inches deep and 6 to 14 inches wide (this will be the hole where the fire is made). Then, dig another hole 8 to 10 inches from the main hole. Tunnel them together so they are connected. Your “tunnel” hole should be approximately 6 to 8 inches wide. The tunnel hole will allow airflow into the hole and keep the fire burning. It is a good fire for windy conditions or when you do not want the flames from your fire to be seen.

Just having a fire may not be enough to keep you warm. If you can, build your fire near some large rocks or boulders. The rocks will reflect the heat and help keep you warmer. If a shelter is placed near your fire (no closer than 10 feet), you should construct a heat reflector on the other side of the fire. With a heat reflector you will notice an increase in heat and light while in your shelter. You can also make a reflector from logs. You just stack them on their sides and support them by driving a sharp limb down each side to hold the stacked wood up. Some folks prefer to peel the bark off of the wood used to make a reflector, but that seems to be too much work for me. I am not sure it makes that much difference, compared to the work required to peel the bark.

Also, if the weather is extremely cold, you can make two or three reflectors, at different angles around your fire and sit in the middle. These reflectors will greatly increase the heat generated by your campfire. The key here is to retain (reflect) what heat your fire is producing, not to make a bigger fire! Large fires will consume more fuel and in windy or snowy conditions that may make finding enough wood dangerous. You may also notice the reflectors assist in keeping the smoke out of your face and going upward.

Fires are often taken for granted. We don't give a second thought to making a fire, piling the wood on, and then forgetting about them. But, in an emergency a properly planned fire is needed. When you only have a limited amount of matches or fuel to start your fire, you must plan ahead. Have all of your tinder, kindling, and fuel ready *before* you attempt to start a fire. In a survival situation, you must do each task as few times as necessary to conserve energy and resources. Think before you act and this is especially important when you make a fire. Decide in advance what you will need to start the fire, the type of fire and the fuels you will use. Then, make your fire as if your life depends on it, because it may.



HOW TO MAKE A FIRE DRILL

1. The spindle, bow, and holder at the top are all hard woods, but the base is a softwood. Examples of hardwoods are hickory or oak, while softwoods are pine or cedar. Notice the holder and the base has a hole in them. This hole is to allow the spindle, when moving, to turn freely. This method of fire making uses friction, which is very difficult for most people to master, but it can be done with a little experience.
2. Shows the base with the hole, but notice the hole has been cut to the very edge of the wood and tinder has been placed at the base, around the hole and notch. As the bow moves and the spindle turns, if you do it long enough and with enough pressure on the holder, the notch will start to smoke. This takes some time and it is not easy for most beginners to do.
3. Once the tinder is smoking, pick it up and move it from side-to-side as shown in the illustration. The glowing ember should become larger.
4. Gently blow on the ember, but not too hard or you'll blow it out. Very gently blow and make sure the tinder is not compressed or flames will not appear.



Use caution because your tinder, which you'll be holding, may burst into flames, so be ready to move it or drop it on your pre-made tinder where you plan to have your fire. Before starting your Bow and Drill, have all you need for a fire ready and close to where you'll be working. Once the fire has started, place it against the tinder in your fire place, and as the flames grow in size slowly add kindling. You'll need dry and small items for tinder, slightly larger twigs and stick for kindling, and various sizes of wood as fuel.

The key to this method is steady pressure on the holder, fast and even work with the bow, and allowing the ember to fall into the fluffy tinder. Additionally air, gently blowing, is needed to get the flames you need for a fire.

In high winds you may have to shield your fire to allow it to ignite or the winds may blow it out. As shown in the illustration, low winds are much easier. Once the tinder catches fire, slowly add small pieces of kindling until the flames grow in size. Once the flames are burning well, add small logs or limbs to the flames.

Keep in mind wet or green wood will give a lot of smoke and both will give you less heat than dead wood. I always try to only use dry dead wood, because pound for pound it produces good hot flames. Don't worry about cutting your wood, you can simply move the log as it burns to the center of your fire. Cutting wood is a lot of work and not needed in most cases when using a campfire.

If you have problems getting your tinder to burning, find a gob of pine/cedar sap or pitch, which grows on the sides of pine or cedar trees, and place it with your tinder. It burns hot and will ignite even damp wood.

Never make your fire under limbs that are closer than ten feet or directly under limbs covered with snow. The rising heat will cause the snow on the limb to melt or fall on your fire, putting it out. Keep your fire small, no larger than a dinner plate, because it'll save fuel and give you lots of heat.



FIRE TRICKS

Gather all of your needed fire making supplies before you start to make your fire. Then, you need a source of ignition, either a match, lighter, flint and steel, or other method. Pay close attention to the winds.

One problem most people have, is attempting to light wet or damp tinder. Your tinder must be bone dry and gather a lot of it. Bird nests work good, as do dried grasses, but make sure it's small and not too big. Your kindling should be just slightly larger than your tinder, but it can vary in size a great deal.

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TYPES OF CAMPFIRES

Depending on where you are, you may have to use a fire to meet the environmental aspects of your survival. During high winds you can use a Teepee fire as well as a Dakota fire, due to the winds blowing the flames. Each fire has its use and it's up to you to decide which fire to use in your situation.

- **Tee Fire**--Good to cook on as long as the top of the tee is not too wide for a pan or skillet to sit on. Regardless of how wide the tee is, it's a good fire to roast meat on in moderate to high winds. May be hard to dig in the desert where the ground is as hard as concrete.
- **Log Cabin Fire**--Great when you need heat or light because it does both very well. However, it consumes a lot of wood, so have a good supply ready before



you light the fire. This fire is excellent for signaling, because of the light it gives off while burning.



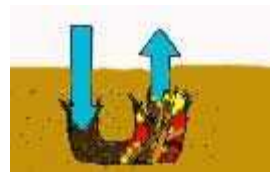
- **Long Log Fire**--Another good cooking fire, as long as the burn area is not wider than your frying or boiling pan. You may have to secure both logs to keep them from rolling and remember, the two main logs will eventually burn as well and need replacing eventually.



- **Key Hole Fire**--Good fire when winds are rough, because the base of your fire is below the surface of the ground. If you have a grill, you can place it over the circle as long as the hole is smaller than the grill, and cook. Good fire for moderate to fairly high winds.



- **Star Fire**--The one I use often, no wood cutting needed, because you simply push the ends of logs into the flames. As each log is consumed by the fire, just push the end of a new log into your fire. It's easy but a little work to keep burning well. It's not a good cooking fire, unless you pull some hot coals away from the open flames to cook on.
- **Dakota Hole Fire**--Great for on the plains when you don't want to be seen or during strong high winds. This fire takes some digging, and it's like a 'U' in the ground. The blue arrows in the illustration show you air flow. It's not a good fire in my opinion for cold weather because it doesn't give off a lot of heat and I had to almost sit on it to keep warm. Not easy to dig in frozen ground either, so keep that in mind.
- **Teepee Fire**--The most common type of fire, but most often is made way too large. Dry woods can usually be broken into various lengths for burning and make sure you have your fire burning before you start to shape the teepee fire, unless you're an experienced outdoors person. This fire gives a lot of heat and light, but coals will have to be pushed to the side to cook with and I usually move them into an area where I have three rocks, like a triangle so I can place a pan on the rocks to cook with. With the hot coals in the middle of the rocks, the pan resting securely on the stones, cooking temperatures are easier to control.



HOW TO MAKE FUEL FOR HOME SURVIVAL

Should you be in a situation of experiencing a natural or human-made disaster, or should there simply be a shortage of normal energy supplies, it's useful to know how to make fuel at home out of whatever might be around. Here are some suggestions.

STEPS

1. **Use the newspapers.** If you're an avid newspaper reader, possibly you'll have a good stock of these somewhere in the house. They are excellent for using in a pinch as fuel. The best method is to turn them into logs. See [How to make newspaper logs](#) for more details. These can be burned in a fireplace, barbecue, or cut down steel drum, etc.



2. **Rummage through your camping or outdoor activity supplies.** If you're a keen camper for sport or fun, you might have a ready supply of fuels at hand in your gear. Consider using your fuel and camping stove for heating water and cooking hot meals. Avoid using camping stoves for heating as it'll soon run out and do not use them indoors or in enclosed areas; be sure to use with plenty of ventilation.



3. **Use the barbecue for cooking.** If you have a gas or charcoal barbecue, use it for cooking. Again, it's not a good idea to use it for heating as you should ration the heating ability for cooked food and do not use barbecues indoors or in confined spaces.



4. **Put candles to work to make a solid fuel source.** If you have plenty of candles in storage, try this method for turning them into fuel sources:
 - Cut stripes of corrugated cardboard into a width of about 2cm/ 1.5".
 - Roll this strip around tightly and squeeze it into a small round can such as those used for fish or small condiments.
 - Melt the (paraffin wax) candles and pour the melted wax over the rolled up cardboard. Make sure it soaks through and fills any gaps.
 - Burn when needed. This can be used for cooking, light, and minor heat. It'll last around 1.5 to 2 hours.



5. **Make a solar oven for cooking using the power of the sun.** See [How to make and use a solar oven for more details](#).



6. **Burn wood.** If you have cords of wood, use them for making fires in suitable places such as a [fireplace](#), a barbecue, a drum or a fire pit in the backyard, etc.
7. **Make fire starters.** If you have some melted wax left over from the previous step, pour it into the hollows of [an egg carton](#). Tear each cube of the carton apart to have ready-to-use fire starters.



TIPS

- If you are a keen home survivalist, ensure good stocks of the things needed to ensure sustained living for up to 30 days without energy sources from the usual suppliers.
- Use candles, flashlights, and solar powered lights for power. Stock up on all items, including LED lighting. This will spare fuel being used merely for lighting purposes.

WARNINGS

- Be very careful not to use fuels that create carbon monoxide inside or on confined areas. Read [How to prevent carbon monoxide poisoning after an emergency for more details](#).

THINGS YOU'LL NEED

- Paraffin wax candles (other wax may also be suitable but preferably not scented)
- Newspapers
- Egg cartons
- Camping equipment
- Barbecue

<http://www.wikihow.com/Make-Fuel-for-Home-Survival>

HOW TO SEASON FIREWOOD

Freshly chopped firewood has up to 50% water content and won't burn in your fireplace. First, you must let the firewood season (dry), which allows the moisture to escape—the drier the wood, the cleaner the burn. When the wood gets down below 20% water content, it's ready to burn. Burning unseasoned (green) or even partially seasoned wood in your stove or fireplace will cause creosote build-up in your chimney, which can lead to a chimney fire at the worst, and a lack of fire or a roomful of smoke at best. Every homeowner reliant on wood should know how to season wood.

STEPS

1. Before drying, know the properties of your wood.

The duration of seasoning depends on the wood and for deciduous trees, when the tree was felled. The sap of deciduous trees moves to the roots in the winter, so such trees felled in winter have a much lower moisture content to begin with, and so will be seasoned more quickly. In general, pine and other softwoods require around 6 to 12 months to season, while hardwoods



such as oak require a year to 2 years.^[1] However, this rule of thumb has exceptions, so knowing the tree type and its water content is important.

- Surface water will usually evaporate quickly; the concern is the moisture content *within* the wood.
- Wood such as shagbark hickory, cherry and black locust will gain little benefit from air drying, as they have low moisture content. On the other hand, wood from such trees as hemlock, cottonwood, American elm and sycamore will benefit from long drying times. Many other tree types are variable.^[2]
- Importantly, there isn't any point seasoning wood longer than it needs to be. Over-dried wood will have less energy as volatile esters in the wood evaporate. These waxy substances contain a great deal of heat energy, so it is a mistake to think that longer is necessarily better.
- A special instrument can be hired or purchased that tests the moisture content of wood (usually known as a "wood moisture test meter" or similar).

2. Gather and stack wood at the right time of year. With the exception of wanting to gather deciduous trees when their sap is lowest during winter, gathering and seasoning wood during the summer season makes good sense because you can take advantage of the warm weather to start drying out the

wood. In areas with little rainfall during summer, open air storage is also a viable option; any rain that does fall will usually replace sap and as the water evaporates faster in the heat, the fuel will dry faster.[\[1\]](#)



3. **Chop the wood in readiness for storage.** It's best to get the pieces down to no more than 6-8 inches (15cm-20cm) in diameter. Eighteen inches (45cm) long is a common size, though 16 inches (40cm) is the correct length for a face cord and will fit better in smaller stoves.



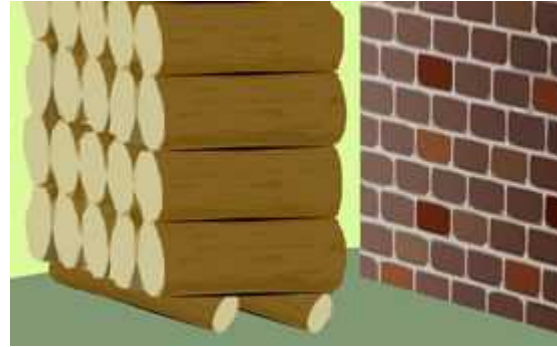
4. **Store the wood outdoors.** Do not store wood inside; if there are termites, you don't want them getting at your house!



5. **Stack the wood so it isn't sitting directly on the ground or right up against a wall.** If you don't have a woodshed, cut two saplings to use as a base to keep the firewood from contact with the ground. Pallets are also a great alternative.
- If you don't have or don't want to make side supports, you can stack the ends by turning the direction of wood 90 degrees with each layer and the end stacks will be self supporting.



6. **Allow space between the stack and a wall to allow air to move.** Air circulation is an essential part of the seasoning process, to ensure that the wood dries. Ideally, you would have a moisture barrier such as a tarp below the wood, and/or have it spaced up off the ground to allow air flow.



7. Ensure that the top of the wood is covered to allow rain (or snow) to run off without soaking the wood.

However, keep the ends of the stack uncovered to allow air to circulate and moisture to escape.

- Bark acts like a lid on firewood, offering natural protection.^[1] On split wood, stack the wood with the bark on the bottom to allow the wood to dry faster. If you are storing the wood without cover, stacking with the bark on top will prevent some of the rain from soaking into the wood.
- There are two theories on the covering of wood during the seasoning process and you must decide for yourself which theory you wish to follow. One theory is that already stated—cover the wood to prevent the rain and snow from entering the center of the stack and gathering there. However, within the firewood community, another theory holds that you do not have to cover your wood at all, ever. Just leave it out there in the weather and it will season just as well as if you covered it. This theory has its supporters and they are quite sure it works just as well as covering your pile. Perhaps divide your wood and try an experiment with both ways.



8. Check for wood dryness. You can use the wood moisture test meter as mentioned earlier, if you have access to one. Alternatively, try these simple tests:

1. Pick two pieces of wood that you think is dry. Knock the two pieces together. If you hear more of a "ring" than a "thud", it's probably dry.
2. Also, check for radial cracks at the ends of the wood, which indicate dryness.
3. Burn a piece on a roaring fire base. If three of the sides begin to burn within 15 minutes, the fuel is dry.



TIPS

- The notion that pine is dangerous to burn, or creates more creosote is an old wives' tale. If seasoned properly, it will not create any more creosote than other types of wood. It does, however, burn hotter and faster than denser hardwoods due to its high resin content, meaning that you'll churn through it faster.
- Place the stack of wood where it will get the most sun all day long.
- Ash cannot be burned immediately as most people seem to think. It needs to be seasoned like any other wood. Most people think ash can be burned immediately because it has a lower moisture content than any other fresh cut woods. Ash can have as little as 30% moisture content compared to 50% of other species of wood. Most wood is seasoned enough after 8 months if proper steps are taken, but longer is better obviously. Ideally you want only 20% moisture content in your wood
- Wood should not be stored closer than twenty feet away from your home. In addition, the ground should be prepared with anti termite protection and should be treated regularly to prevent termites and carpenter ants from forming a home in your wood pile.

Warnings

- Do not stack wood higher than your own height. Being hit on the head by a log falling can cause serious injury.
- Never stack rotten wood—there is no point keeping it as it will provide very little heat when burned.
- Never completely cover the wood with a tarp. It will serve to trap the moisture that is escaping from the wood and will rot the wood rather than dry it. The moisture must be allowed to escape the pile.
- Be wary of snakes, spiders and/or other potentially dangerous creatures taking up residence in your wood pile. Never put your hand into a pile unprotected—purchase decent leather or other gloves and move wood from the edges rather than sticking hands into holes.
- Some woods naturally spit a lot, even after seasoning. Take additional care with such woods to avoid dry materials and fabrics from catching on fire due to sparks.
- Be careful chopping wood. It's easier than you think to injure yourself with that axe. (Actually, accidents with axes are one of the leading causes of injuries in homes where homeowners provide their own wood.)
- When chopping wood, wear goggles and baseball catcher's shin guards to protect yourself from the axe entering your shins on a missed swing.
- Avoid using endangered species of trees for wood, as well as avoiding any native species that are on the decline.
- Do not burn unseasoned (green) or even partially seasoned wood in your stove or fireplace as this will cause creosote build-up in your chimney, which could lead to a chimney fire. Moreover, it may not even burn at all.

<http://www.wikihow.com/Season-Firewood>

Survival Tips

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10 SURVIVAL RULES

There are those of use who spend a lot of time in the woods, but we rarely think about survival. We spend days or perhaps even weeks living in the woods, hunting, fishing, hiking, or just camping out and do it all with without a care in the world. I realize that is why most of us spent time with Mother Nature, however, as beautiful as the outdoors is, it can be a very harsh place for those who are not prepared. She can be deadly to the foolhardy. So to assist me when I am in the wilds I have developed the Ten Rules to Survive By:

1. **Always be prepared to survive, always!** No matter if you are just taking an afternoon hike on a designated trail in a National Forest, and you do not intend to get off of the beaten trail, make sure to take a survival kit. Additionally, carry clothing for changes in the weather, for instance, ponchos, hats, light jacket, even on days it looks like you won't need them. The weather can change a lot in just a few hours and in the mountains this change can occur in just a few minutes. Ensure any clothing, boots (I never wear sneakers in the woods), or gloves you carry fit properly and are in good condition. If you are an inexperienced outdoors person, take a small survival book (I like the SAS survival manual for its size and information) along with a good first aid book. Both of these could save your life in an emergency.
Your kit should, as a *minimum* have the following items packed in it, or you should carry them on yourself,
 - A quality penknife or jack knife
 - Condoms for water storage, un-lubricated, or plastic freezer bags
 - Water proof matches
 - Flint and steel or a metal match
 - Water purification tablets
 - A long strip of heavy-duty aluminum foil folded up to cook with
 - Fishing kit, i.e., hooks, sinkers, and some line. Nothing fancy.
 - Commercial back packing first aid kit (with instructions). I carry a small first aid kit (I have placed a small hotel size bar of soap inside my kit).
 - One small pack of gum and one pack of hard candy (energy)
 - Casualty Blanket, sometimes called a thermal blanket
 - Instant powder broth, beef or chicken, four servings total
 - Survival Whistle, small, made of plastic and with a lanyard
 - Any prescription medications you might need or other components you feel you have to have along.
2. **Always tell someone you are going.** Each year search and rescues are initiated for people lost in the woods and the effort is often made very difficult because the rescue team has no starting point. When you go outdoors, always tell someone the who, what, when, and where of your trip. An example might be telling your boss (who) that you and your wife are going camping (what) over the weekend (when) in Big Piney Mountains (where). I suggest you give even more details, such as the date and time you intend to leave as well as when you

expect to return. I would also suggest telling more about where you are camping, the exact spot if you know the name of it would help.

3. **If you become lost in the woods**, or have to survive for any number of reasons, your first concern (unless the weather is really nasty) is finding safe drinking water. My reason for putting water so high on this list is due to the fact that the human body can only survive for around three days without water (depending on the ambient air temperature of course). You can carry large zip-lock freezer bags, unlubricated condoms, or even rubber gloves to use as emergency containers if needed. I always carry a quart canteen on my web belt. Another aspect of water to consider is just how safe is the water you will be drinking? Even if the water source is crystal clear and fast moving, always treat drinking water with water purification tablets or boil it. If you use a commercial "water straw" or other filtering system, make sure it is rated to do the job you require of it.
4. **Regardless of the weather, construct a shelter.** Weather conditions can change quickly, as I said earlier, and you don't want to be caught out in a blizzard, rainstorm, or hailstorm, attempting to survive without a shelter. Another reason to construct a shelter is for psychological reasons. Mankind has a deep need for having a shelter on hand. Just seeing a shelter is often a great psychological relief and while it is not a home, it will assist in making the time you spend in an emergency situation that much more comfortable. I always carry a poncho and it can be used to make a shelter very quickly. Simply tie a line (from your survival kit) between two trees, about two feet off the ground, place the poncho over the line (centered), and stake the hanging ends of the poncho down using sharpened sticks. It will actually look like a pup tent.
5. **Unless the weather is extremely cold**, I usually procure water and construct a shelter before I worry about this step, **making a fire**. While a fire is needed, its importance is often much over rated. Of course in cold weather you need a fire to keep warm and to avoid hypothermia, but in most cases we have a fire for purely psychological reasons. Remember to keep your fire burning in a fire pit and surround the pit with stones (in the winter this may not be possible, but you can make your fire on a platform of green logs). Keep your fire small and not too close to your shelter. Also, use only dry dead wood, because green or wet wood will smoke, burn slowly, and give off little heat. In wet weather you usually find dry wood (squaw wood) on the ground under the lower branches of big trees. Keep in mind it may be up near the base (trunk) of the tree. And, keep your fire safe by having water, snow, dirt, or sand available to use in case the fire gets out of hand.
6. **If you experience an injury**, regardless of how slight it might be, take care of it immediately. That means washing it with soap and water, disinfecting it with alcohol or other medication from your first aid kit (always carry a first aid kit with you in the field), and then covering the injury to keep it clean. You can cover most injuries with a simple band-aid, in other cases you may need to rip up some of your clean clothing. Keep the injury clean too. Each day I suggest you removed the bandage, wash the injured area, disinfect it once more, and then recover it. Even the smallest cuts can quickly become infected if not properly cared for in the woods, so take care of all injuries immediately.

7. **Stay as dry as possible.** It's my opinion that nothing causes more discomfort to a person in a survival situation like being wet, unless it is being both wet and cold. Gather all possible foods, procure all water, and gather plenty of wood before the bad weather hits, if possible. I realize in some situations you will not be able to do that. But, at the same time, use good common sense; if you don't need something immediately to survive don't go out in the rain in an attempt to locate it. Stay under your shelter and wait for a break in the weather. Unlike at home, you can't throw your wet clothing in a dryer and wait twenty minutes for them to dry. It can take a very long time for your clothing to dry by a campfire and in the mean time you may be shivering in the cold, or perhaps even experience hypothermia (the lowering of the body's core temperature). Additionally, dry clothing will keep you warmer and feeling much better. A suggestion here, wool, Thinsolite®, and Goretex® will all keep you dry and warm even when wet. Of the three types of material, wool is less expensive to purchase and does an excellent job even when soaking wet.
8. **As soon as your immediate survival needs are met,** start construction of some sort of signals. Keep in mind, the idea behind a signal is to draw attention to your position. You can do this by using contrasts in color, shapes, or sunlight. For instance, a large "X" could be made by piling snow up in an open field (make the signal at least eighteen feet long and three wide if possible). The "walls" of this signal will cast a shadow (if the sun is out) and should be visible to aircrew members flying near by. On cloudy or hazy days, make three small fires and place them so they resemble a triangle (with a fire at each corner). When you hear an aircraft flying near, add pine boughs or grasses to make the fire flare up (be careful not to let your fire get out of hand at this point or of being burned). The sudden flare of the fires as well as the color of the smoke will attract attention. Keep your signal mirror, whistle, or other emergency signaling equipment from your survival kit **on you at all times.**
9. **One aspect of survival most folks never consider is hygiene.** Unlike a normal camping situation, if you get ill from poor hygiene in a survival situation you are not running off to the doctor or emergency room for treatment. And, survival hygiene is much more than just keeping clean and it also takes some thought. In the field I shave and wash daily because I feel better and it is important to stay clean to avoid infections from small cuts. Also, designate a toilet area and make sure everyone with you uses it. Locate your "bathroom" away from your immediate survival site (I suggest a hundred feet) and not near any source of water. Additionally, don't locate your toilet up hill from your camp. Wastewater, urine and dirty wash water (if you are lucky enough to have enough water to wash with) will run down hill. When the temperatures are mild, make sure everyone uses loosened soil to cover human waste; it will keep the flies and other insects down (not to mention the smell). Clean all foods and treat all drinking water prior to using. Dirty food and "bad" water can lay you low in no time at all. Just like home, wash your hands (if you have enough water to do so) prior to preparing meals, keep any utensils you use clean (even if it is only a pocket knife), and keep your survival site clean of bones, scraps of food, and waste. Poor hygiene will not only lay you low, it could keep you low for a very long time.

10. **Finally, consider your mental health.** Humans are creatures of groups and as such, we tend to suffer from anxiety when separated from others. In a survival situation, separation is why we are where we are. A mishap has occurred that has placed you outside our society. You must fight back against unhealthy thoughts as you attempt to survive. Remember, people are looking for you and if you just stay safe they will eventually find you. It is normal for you to experience periodic feelings of helplessness, deep concern, anxiety, or fear. The key is for you to stay as busy as possible and not to dwell on those feelings. Stay active and remind yourself at times on the progress you are making toward your own survival. Concentrate on successes and not failures. You can expect some failures; so don't keep harping on them over and over again, because it will just wear you down mentally.

Survival is difficult at the best of times. The ceaseless struggle of trying to stay alive, the constant battle with our own minds, and even keeping the will to survive can be very difficult tasks. I suggest, while these steps in themselves will not keep you alive, they will give you a better understanding of what can needs to be done in a survival situation. However, I do believe if you follow my ten steps to survival, you too will survive! Remember the 10rules.

When I'm assembling a new survival kit, I always find it helpful to work from a survival kit checklist. This allows me to organize my thoughts on paper before committing to adding perhaps unnecessary supplies to a kit. The checklist also prevents me from overlooking some needed component. Regardless of the size or intended purpose of the kit, it should meet your basic needs during or immediately following a disaster or crisis. What I find useful is to take my survival kit checklist and break it into sections, with each section focusing on meeting one of my basic needs.

These needs are:

- Water
- Food
- Shelter / Fire
- First Aid
- Hygiene
- Lighting
- Tools

Naturally, the overall size of the kit will dictate how I meet those needs.! A full-size hiking backpack will afford me much more space than a fanny pack.! Regardless of the pack size though, weight is always a concern. So, while a large pack would give me the room for canned goods, I'll not include them because they are too heavy.

Also, while some items I'd include in a survival kit may serve multiple purposes, I only list them under their primary use category. For example, hand sanitizer not only cleans hands but because of the high alcohol content, it will help get a fire going. But, I'll just list it under Hygiene and leave it at that.

To meet my water needs, I'll usually start with one or two water bottles. One liter seems to be a good size for most kits. I'll then add means of purifying more water, such as purification tablets. Depending on how large of a kit I'm building, I might include a small pot I can use to boil water as well. Coffee filters are present on almost all of my survival kit checklists as they work very well for filtering out sediment from questionable water sources.

For food, I often stick with just some basics, like granola bars and dried fruit. I want something that is going to provide a good amount of calories in a small, easily stored package. I tend to avoid most dehydrated foods as I don't want to have to rely on cooking.

Space blankets are also present in all my survival kits. They fold up very small, weigh next to nothing, yet work exceedingly well in retaining my body heat and keeping the wind out. I also like to include 550 paracord whenever possible as it is very useful when constructing expedient shelters. For lighting fires, I include strike anywhere matches, butane lighters, and dryer lint as tinder.

Every survival kit checklist should have at least minimal first aid supplies. The absolute bare minimum would include adhesive bandages, burn cream, antibiotic ointment, and pain relievers like ibuprofen. Because I'm an admitted caffeine junkie, I usually toss in a few caffeine tablets as well to stave off withdrawal headaches.

Even the smallest survival kit I build will have a supply of baby wipes. If I have the room, I'll also toss in a roll of toilet paper. Remove the cardboard tube and place it in a plastic bag.! Without the cardboard, it is easy to crush it down to a much smaller size. In a larger kit, I'll also include a bar of soap, wash cloth, and even toothpaste and a toothbrush. Keeping clean will reduce the possibility of illness and infection. Hand sanitizer works well in this stead too.

Lighting is satisfied by some form of flashlight and/or head lamp. The size of these items is dictated by the overall size of the pack. Spare batteries for these is a must as well.! If I have room, I'll stuff in a few glow sticks I'll pick up at my local dollar store.

As for tools, a sharp knife is on top of the survival kit checklist. A knife will be of great help in a variety of tasks, from building a shelter to preparing food. Duct tape is an excellent resource as well. A multi-tool is also useful, but don't replace your sharp knife with it. Keep both of them in the kit if you have the space.

WHAT DO I NEED IN A SURVIVAL KIT?

In any emergency scenario, your goal is to stay alive. In most survival situations where people die, it is because of either hypothermia (cold) or hyperthermia (heat). If you don't keep control of your core body temperature, your body will quickly fail you. It is critically important to maintain your body temperature at a normal 98.6 degrees.

SOUNDS SIMPLE ENOUGH. HOW DO I DO THAT?

Within your survival kit, the most important thing you can have is the ability to create fire. When choosing components for your own kit, you want to make sure you have multiple ways of starting a fire. Do not rely on only one method - if one fails you, have a back-up method.

The next step in maintaining core body temperature is to have a shelter. In survival kits, shelter can be as simple as a garbage bag, a plastic tube tent, an all weather blanket set up as a lean to, or a full fledged tent that's lightweight and easily packable.

When it's raining, windy, snowing, sleeting, or just plain too hot out, you want to have something that will block the effects of weather and the sun. Staying out of the weather gives your body the relief it needs to keep you warm or cool.

Take the shelter component of your survival kit seriously. This will be what you sleep in and live out of for the duration of the event. While a garbage bag is good for a quick get-out-of-the-rain item, planning for longer term should be what you're after.

A tube tent provides a temporary shelter from the wind and precipitation. While we recommend this when preparing for a short emergency, it is not designed to last a very long time. A real camping tent is your best bet to have in your emergency stores. Just be sure to get one that can be easily carried with you if you have to move.

Even if you keep water in your survival kit, it will eventually run out. In your planning stage, make sure to include a container you can use to fill with any water you find. Be sure to treat any water by boiling or by using [water purification tablets](#). Your container should be metal for boiling and a good recommendation is to use a [canteen cup](#) or a 32 oz metal water bottle. Emphasis on metal because you will need to boil water and you need a metal container in order to do that.

If you are in a situation where rescue is needed, be sure to have some signaling devices. This can be your fire used as a signal fire with smoke, a loud whistle for people to hear, any type of light, or you may need a signal mirror to flash an overhead aircraft, or a boat out in the water, or people on the next ridge over. *Will you need a signaling device?* You don't know what kind of situation you may find yourself in, so it's best to prepare and have it on hand anyway. If rescue is your only way out, then you'd definitely want something.

Carrying some cordage such as [550 cord](#) or bank line gives you another tool to help you survive. This is important because you will certainly find a need for good strong cordage in a survival situation. You can fashion snares and traps, secure a better shelter, tie essential gear to your body, and it may be needed to affect your own self-rescue.

One aspect of survival that many forget is being prepared . Once you are forced to spend the night in the woods is not when you should discover you don't have matches. Or, that you don't know basic first aid or how to use some of your survival gear. Prepare . Be a scout and remember the scout motto, always be prepared .

You can construct a survival kit and make it as big or small as you like. The more experience you have, of course, the smaller the kit can safely be. The area you are going to also plays a factor in the type of survival kit you carry. If I am in the states, I often just carry a small minimum kit. But, if hunting in Alaska, I use a survival vest.

The vest can be made using a fishing vest or by purchasing a surplus military aviation vest. I use the aviator's vest because I still have the one the military gave me more than twenty-five years ago. It is light and works well. The key to using a vest is to be able to put all of your stuff in the pockets. If you use a fishing vest, you may have to sew a few more pockets on it. At any rate, a vest is a great way to carry your survival gear. For the sake of clarity, I will concentrate on the kit now, not the vest. The vest is only a container with allows you to carry more.

I never go out into the field without my survival kit with me. No, it is not very big and it does not weigh much, but it could prove to be a life saver. I actually carry most of it in a small plastic box about three inches wide and about five inches long (about the size of a band aid box). I have it in my right pants cargo pocket at all times. What do I have in it?

1. A quality penknife or jack knife.
2. Condoms for water storage, unlubricated.
3. Water proof matches or storm proof matches.
4. Flint and steel, or a metal match.
5. Water purification tablets.
6. A long strip of aluminum foil folded up to cook with.
7. Fishing kit, i.e., hooks, sinkers, and some line. Nothing fancy.
8. Commercial back packing first aid kit (with instructions). I carry a very small one.
9. One small pack of gum and one of hard candy (energy).

Also, I carry four other things on my person. I carry a good quality space blanket, a ripstop poncho, dry socks, and about twenty feet of 550 cord (parachute line). I have found I can survive with the above items. And, all of this stuff weighs almost nothing. I carry it all in one cargo pocket and still have lots of room left. It is my insurance policy.

One other area I need to discuss is how you dress when you are in the woods, since it affects your chances for survival. I usually wear military cargo pocket styled pants and shirts. These can be picked up in surplus stores at a good price. I also have good

boots, warm socks, and always have a belt. I wear a wide brimmed hat to shade my eyes from the elements.

Of course you know I also have a poncho in my kit, but not much else is really needed. If you want to get a fanny pack and wear jeans, all of the equipment I have listed will easily fit into the container. Once you are in a survival situation is not the time to decide you need the gear. You must have it with you, or you will do without.

Often, what you have with you will be all you have to use for survival. Remember, your mind is your best tool. Your determination to survive driving force, and your best motivation is the will to survive. With a survival kit, your mind, and strong determination, you too can survive until rescued.

SURVIVAL KIT LIST

A survival kit list starts with the container for the kit itself. This ideally will be a backpack or duffel bag - something easily carried while keeping your hands free. I've seen some folks using rolling duffel bags or suitcases. I don't recommend that approach as the wheels only work well on smooth pavement. Once you get on gravel, grass, or snow, they are nothing but heavy.

Your survival kit list should be broken into categories of food, water, first aid, hygiene, lighting, and shelter / warmth. These are the needs a survival kit should satisfy.

When it comes to food, you're not packing to feed an army for weeks on end. You want high calorie items that store well and require little or no preparation before consuming. Suggestions include protein bars, dried fruit, crackers, nuts, and granola bars. Food is fuel and while the average person can last a few weeks without it, I wouldn't recommend doing so.

The body can only go a few days without water so you'll need to plan for that on your survival kit list. One or two filled water bottles is a good start. After that, add in water purification tablets and/or a commercially made water filter system. This allows you to refill your water bottles with water you may find in streams, lakes, or even puddles.

Every survival kit should have a first aid component. Things to include would be adhesive bandages, burn cream, antibiotic cream, and elastic wrap for sprains.!! Tweezers are great for removing splinters. There are many pre-made first aid kits available online and in stores but be sure to inspect the contents and add in anything you feel is missing.

While people have been using leaves for centuries, most of us would appreciate having real toilet paper in our survival kits. Baby wipes are another great addition to the hygiene portion of your survival kit list. Consider adding a small bottle of hand sanitizer as well. Keeping clean reduces the risk of infections and illness.

While lighting might not be absolutely necessary for survival in many situations, it sure makes life easier when you can see what you're doing. LED flashlights and head lamps are preferred over incandescent bulbs because they draw much less energy and are considerably brighter. Glow sticks purchased from the dollar store are also good to have.

Being able to stay warm and dry is not only important for survival, it is a great boost to morale. So, be sure your survival kit list includes ways to stay out of the elements and start campfires. Rain ponchos and emergency blankets will do well to keep rain and snow off of you. Butane lighters, strike anywhere matches, and magnesium strikers all do well with starting fires. Be sure to also include some ready to use tinder, such as dryer lint.

SURVIVAL WEAPONS

WILD SURVIVAL WEAPONS YOU CAN MAKE

For some people, the idea of being in the bush without a weapon is very scary. In fact, folks often ask me, "How do you defend yourself?" I always have a chuckle at this the question because I am to "defend myself against what? Wild attacking rabbits, squirrels, or ducks?" Unless a person is attempting to survive in a combat area, the actual need for a weapon for personal protection varies. In most cases no weapon is need at all, unless it is being used to assist the survivor in procuring food or in camp chores. In most of North America the need to have a weapon for protection against wild animals is not very great.

Most critters in the wild know man, and wisely they shy away from us. Nonetheless, we have all seen the television and movie scenes where large packs of wolves, wild dogs, or other animals, attack a campsite. It is pure nonsense. Now, if an animal is rabid though, anything is possible. Oh, I am not saying campsites are never attacked, but when it happens, it is usually by a solitary bear, cougar, or other type of large meat eater. And, they are generally after sources of food (keep a clean campsite), or your horses, not you. And, of course, at times humans can become part of the menu. When I lived in Alaska one danger to many campers, hunters and fishermen was not even a meat eater, but a moose. It is important for you to keep all of this in proper perspective and to have a basic understanding of survival or camping safety. If you don't, you will never have a good night's sleep in the wild.

So, you feel the need for a weapon? I agree it is a good idea to have one, but mainly to kill game caught in snares, traps, or caught cornered. If you feel the need for safety and security and desire to have a large weapon, you can make those as well. A lot of the weapons you make will depend on how and where you ended up in a survival situation. If you are a hunter and become lost, or in some manner are faced with survival, you may have weapons with you. Or, you may not. A lot of different situations can occur in the wilderness. Weapons can be lost or broken.

If you are the survivor of a plane crash, a sinking or overturned boat, (and the boat you were on washed up on shore, you will be in luck.) or a stranded vehicle, you may have more materials to work with. Keep in mind; in cold or hot weather never use the interior of any vehicle for shelter. It will be to hot or too cold. The wings of an aircraft will provide you with shade and protection from the sun. But, vehicles can provide you with many items to make tools, weapons, and other needed items. The weapons you can make from wreckage or a stranded vehicle will be limited only by your imagination. Without any wreckage the task of making weapons is harder, but not all that difficult.

Almost anything around you can become a weapon. Those of you who have attended self-defense classes know that a pencil, car key, bottle, book, comb, or even a thumb can become effective weapons. Regardless of the type of weapon you may want, you

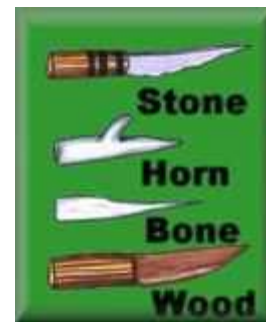
will be limited by the sources around you. In some areas you may not have many stones, rocks, or even wood (arctic conditions north of the tree line). In other survival situations you may not even be on land, you may be at sea. In all cases, look around and take inventory of all of your equipment. I have known survivors to use the sharp edges from a ration can to make a crude knife to gut fish with. I have known others who used a sharpened belt buckle to cut with, and still others who field dressed small game with their teeth. You have weapons all around you, so look for them. Keep your imagination active at all times.

One of the most handy survival weapons is a simple club. It is very useful in killing small game and for general camp use. It is simple to make and can be constructed of many different materials. Using a forked piece of green limb (hard wood works the best), a large rock or piece of bone, and some vine, wire, or rope, you can make a club in next to no time (I always carry about 25 feet of parachute 550 cord in my survival kit).



Make sure the limb has a Y section on it and fit the rock into this section (See the club illustration), then secure the stone or bone in place using wire, rope, cord, vine, or wet rawhide. Wet rawhide is the best because it will shrink as it dries and holds the stone securely in place.

A simple knife for stabbing with can be made from pieces of bone or from an antler. Just break off or locate a piece that is large enough to hold securely and has a sharp point. While you will not be able to cut with it, it can be used to stab with. Or, you can use a sharp tipped piece of wood (See the knife illustration).



If you need a knife to cut with, consider using sharp edged bones, hard stone, metal from a wreckage, wood, or even glass for the blade. In a survival situation you may have to use what you can find to make tools and weapons with. Almost any sharp edge from any hard material can be used. If you want to take the time to make an effective knife, use the illustrations with this article as a guide. Find a piece of green hard wood, split it slightly, insert your blade, and then wrap the handle tightly. Once again, wet rawhide makes the best wrap because it shrinks when it dries and will hold the blade firmly in place. (See the knife illustrations)

Another weapon that is easy to make is a spear. It is very useful in killing any game you don't want to touch or get too close to. An example might be a snake, porcupine, or any injury causing animals. In injury causing category remember horns, antlers, teeth, fangs, and hooves can all cause injuries. A spear can be made as simply as sharpening the end of long green piece of wood and hardening it in a fire. Or, you can attach a blade point using the same types of materials you used for your knife blade.



And, the spear point can be attached exactly like your knife blade was, using wire, vine, string, cord, or wet rawhide (See the spear illustration). An easier way to attach a

point to a spear shaft is to simply tie it on. Place a knife parallel to and tightly up against the shaft of the spear. Then lash it on securely.

Two more weapons that you can make, and use mainly against small game, are the slingshot and bola (See the illustrations).

- For the slingshot you start by cutting a Y shaped piece of green wood, cutting two strips of rubber (from a tire or rubber tubing) about eight inches long, and a pouch that can be made from cloth or leather. Secure the two strips of rubber on both sides of the Y on the wood near the top, tie the pouch to the open ends of the rubber strips, and you now have a weapon. You can use small pebbles as ammo. I assure you with practice you can procure a bird or rabbit for dinner. A hint here, use two or three small pebbles when you shoot (makes it more likely to hit a target).
- The bola is much more difficult to use but is simple to make. Tie all three ends of the pieces of string or cord (I use parachute 550 cord) together at one end. At the other ends, tie a stone on each piece of line. You now have three cords with a stone on each end that meets and is secured at the other end (See the bola illustration). To use the bola, grasp the tied end, twirl it over your head, release it toward your target. Once you release the bola, it opens up and covers a very wide path. While it is very effective against birds, it can also wrap around the legs of larger game and trip it. Then, using your newly made spear and knife, you can kill it and process the meat.

While the making and using of primitive weapons takes some time, it can be done. I suggest using your spear to stab with, not throwing. If you only have one spear and you throw it, what do you do if the animal turns on you? Do not throw the only weapon you have available, keep it in your hands. Plus, depending on the type of blade your spear has, you may break it. These same weapons were used by early man many years ago and they were deadly in the hands of a person who knew how to use them. The Native North Americans kept their families alive with such weapons by providing both food and protection. If others can do it, so can you.

There are unlimited sources around most survivors for use as weapons. Keep in mind that some of these sources may not be recognized as such by most survivors. Bone, glass, and rough metals, stones, antlers, horns, and other materials can be modified for use as weapons. Keep your survival mind active and evaluating all material at hand. I realize there may be many more different types of weapons made from natural materials, but as usual, my purpose for writing this article was to stimulate your thoughts. I want you to think about making weapons from materials you have on hand. Some of the weapons I have explained here can be done in many different, and perhaps better ways. I have only shown you the basic methods.

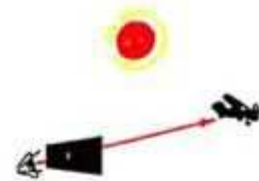
Good luck and I hope to see you on nature's trail soon.

SURVIVAL SIGNALING

Strobe lights are great for night signaling, but avoid looking at the flash. If you have been watching the strobe flash, you will not be able to see if you've been seen or not. Blindness from the strobe, while only temporary, will hinder and slow down the rescue. Turn your head away from the flashing light and glance at the sound of the aircraft every few seconds. Strobe lights can be seen in clear weather for long distances and while they work in poor weather, such as rain or fog, they're not as visible.



Signal mirrors are great for all environments, but are limited to only day use. Practice using your mirror before you need it! Once you get the attention of an aircraft, move the flash to the rear of the plane to avoid blinding the pilot, not to mention making him/her angry. If the aircraft appears to move away from your position, flash the mirror at the cockpit once or twice. Keep in mind, the aircraft that finds you may not be the aircraft that does the actual rescue. However, your position will be marked and rescue will come, but perhaps from the ground or air. Keep an open mind and be ready no matter where rescue comes from because you may only get one chance. Bad weather can easily stop a rescue and recover effort, but stay where you know they saw you, if the weather allows you to do so.



You can signal from the ground by stacking rocks, piling snow or brush. An "X" means you are unable to proceed and need assistance. Make your ground signals large enough to be seen from the air and that usually means about 3 or 4 feet wide and maybe 15 to 20 feet long. Make it high enough it casts a good shadow in the sunlight. Or, three fires burning in a triangle, three gunshots, or three loud blasts of a whistle. The key to remember, it three of anything. One of your fires can be your normal campfire, with the other two ready to light when you hear rescuers nearing. That means you'll need something to transport the fire from your campfire to the other two fires. You can use a piece of burning wood, but avoid dropping burning embers on the ground, it could cause a fire you don't want.

HOW TO MAKE A SUNDIAL

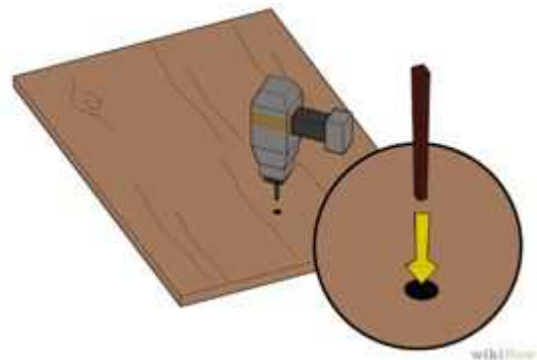
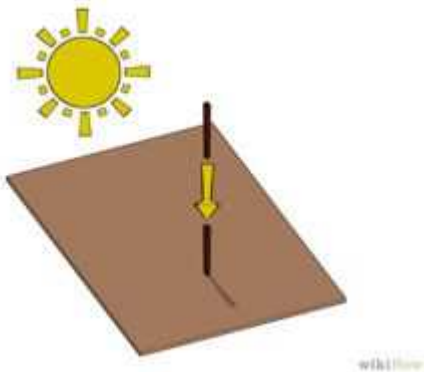
A sundial is an ancient device for measuring time by using only the sun and its shadows. Making a sundial can be an enjoyable learning experience. Whether for fun or for a school project, you can follow these steps to learn how to make a sundial at home.

STEPS

1. **Place a 2-by-3 foot flat piece of cardboard or wood in an outside spot that has full sun exposure.**
 - Be sure to choose a spot where, if you ever need to move your sundial, you can return it. This will help ensure the sundial's accuracy.



2. **Punch a 7-inch (17.75cm) stick or dowel through the bottom center of the cardboard so that it's standing upright.**
 - If you are using flat wood, drill a small hole in the bottom center of the wood for the stick or dowel to fit into so that it's standing upright.



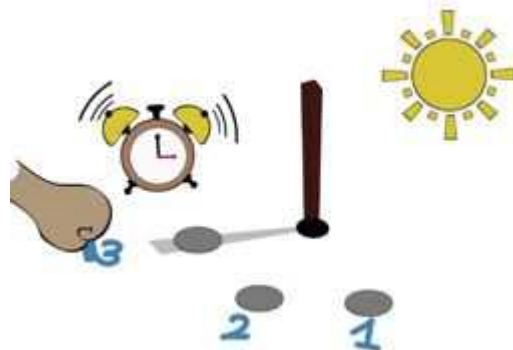
3. **Mark the first hour.** Put a stone or thumb tack at the top of the flat cardboard or wood surface where the shadow of the stick falls at the top of the hour in which you are beginning the recordings.



4. **Set the timer to sound off at the top of every hour.**

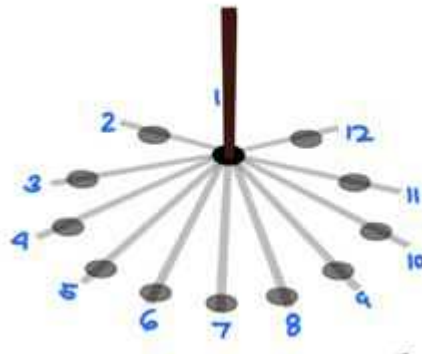


5. **Write the number of the hour next to the stone or thumb tack each time the timer sounds.** For example, when the timer sounds at 6 o'clock, write a 6 next to the stone or thumb tack.



6. **Repeat this process until 13 hours are marked on the cardboard or wood.**

- The pattern of stones or thumb tacks should have appearance of a semi-circle when completed. It should end with the same number it begins with. For example, if your sundial begins at 7am, it should end at 7pm.
- Depending on the time of day you begin, it may take a couple of days for your sundial to be complete. If you begin late in the day, stop

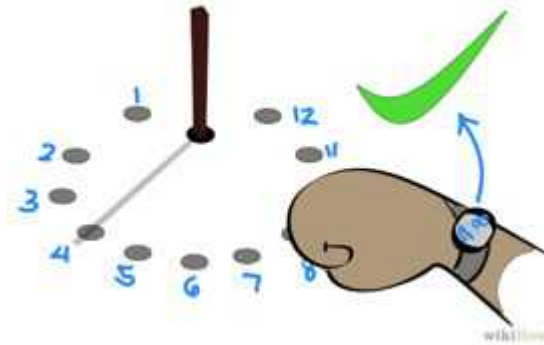


when the sun goes down and begin the next day when the sun rises, marking each hour until you reach the the first mark of the day before.

7. Test your sundial by comparing the time it indicates to the actual time.

Make adjustments if necessary.

8. Finished.



TIPS

- If you are using wood as your flat surface and do not want to drill a hole, you can use putty or modeling clay to hold the stick or dowel in place.
- To preserve your homemade sundial, you may want to cover it with a large garbage bag on days when it rains or snows. If you choose to move it out of the weather, just be sure to put it back in the same place to maintain the sundial's accuracy.
- Be sure to keep the sundial facing the same direction to ensure that your hour marks stay accurate.
- If you prefer, you can use a ruler to draw lines where the sun's shadow falls instead of marking the top with a stone or thumb tack.

THINGS YOU'LL NEED

- A 2-by-3 foot piece of flat cardboard or wood
- 13 small stones or thumb tacks
- Stick, dowel or thin block of wood approximately 7 inches (17.75 cm) in length
- Timer

<http://www.wikihow.com/Make-a-Sundial>

HOW TO LEARN MORSE CODE

Edited by Wireless Powerlines, Krystle, General Jackson, Sondra C and 44 others
The Morse Code was developed by Samuel F.B. Morse in 1844. Even after more than 160 years, it is still used today, especially by amateur radio operators. The code can be sent quickly over the telegraph, and is also useful for emergency signaling (SOS) with a radio, mirror, or flashlight, and even for people with severe disabilities to communicate. In order to master Morse code, however, you need to approach it like a new language. Here's how to get started.

STEPS

1. **Listen carefully to slow morse code recordings.** What you're listening for is a combination of dots and dashes (also referred to as dits and dahs). A *dit* is a short beep, while a *dah* is a longer beep (three times longer). Every letter is separated by a short pause, and every word is separated by a longer pause (three times longer). • You can search or shop for practice recordings, or use a shortwave receiver to listen to the real thing. Free and inexpensive Morse training software is available and usually better than the recordings, it can be set to change the text randomly so it never gets "stale" and you can choose whatever learning method works best for you. Never count dots and dashes, learn the sound of the letter. If you are using Farnsworth, you set the spacing between letters slower than the letter speed. Choose a letter speed a bit above your target code speed and never lower the letter speed, only the letter spacing. This is the way to learn Morse as a language, 15-25 words per minute or more. The following methods are best used when you have no intention of using Morse above 5 words per minute, they will require you to unlearn the bad habits and start over.
2. **Refer to a copy of the Morse Code alphabet (as seen at the bottom of the page).** You can use a basic chart such as the one shown at right (click to enlarge), or you can use a more advanced chart which includes punctuation, abbreviated phrases, prosigns and Q Codes.[\[1\]](#) Match up what you heard to the letters in the alphabet. What does it say? Were you correct? Some people find it easier to learn by writing down the letter with dots/periods and dashes, and comparing it to a chart such as the one shown; others say this creates an additional step that will only slow you down in learning Morse code. Do whatever feels more comfortable for you. If you choose to avoid interpreting written dots and dashes, you can use a pronunciation chart which lists the sounds of the Morse Code signals, as if you were hearing them, rather than the dash and dot symbols.[\[2\]](#)

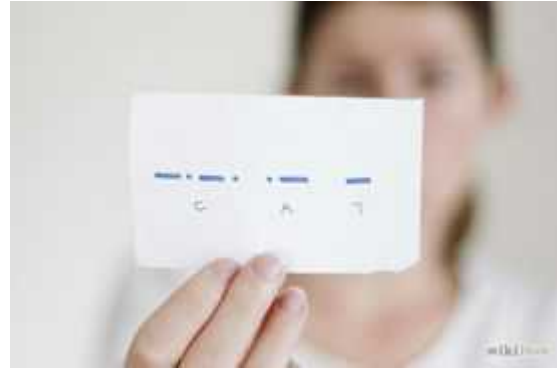


3. **Sound it out.** Practice translating basic words and sentences into Morse code.

In the beginning, you can write it down, then sound it out, but eventually you'll need to go straight to sounding it out. For example, the word "cat". Write it down: -.-. .- - then transmit the word (you can use the buttons on a mobile phone, or beep vocally -- the latter will probably help your mind pick up the code faster). To pronounce morse code,

dit is pronounced di with a short i sound and a silent t. Dah is pronounced with a short a sound. So cat is pronounced dah-di-dah-di di-dah dah. Once you feel comfortable with that, pick up a children's book and try to transmit the content in Morse code *without* writing anything down. Record yourself and play it back later to see if you were correct.

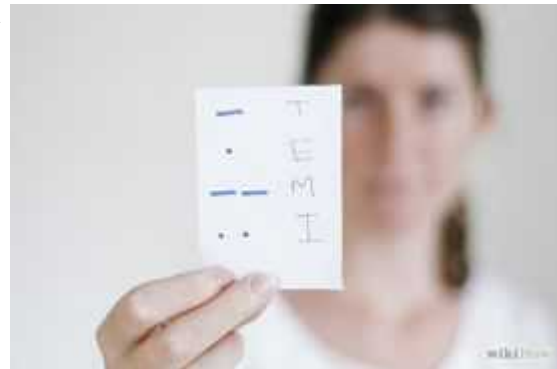
- Be conscious of your spacing. Each letter needs to be separated by a space that's the same duration as a dah (three times the duration of a dit). Each word needs to be separated by a space that lasts about seven times the duration of a dit. The better your spacing, the easier your code will be to understand.



4. **Memorize the easiest letters first.**^[3] A

single dah is a "T" and a single dit is an "E". Next, a dah-dah is an "M" and a dit-dit is an "I". Memorize the letters for 3 and 4 dits and dahs in a row. Once you've got those down, start memorizing the combinations: dit-dah, dit-dah-dah, dit-dah-dah-dah, and so on. Leave the more complex combinations for last. Fortunately, this includes some less commonly used

letters (like Q, Y, X, and V) so when you get to this point, focus on the more commonly used letters first. Notice how E and T have the shortest symbols, and how K, Z, Q, and X have long symbols.



5. **Make associations.** For every letter, think of a memorable "sound alike". Here's an example: The letter "C" is dah-dit-dah-dit (long short long short). Can you think of a word that starts with that letter, and sounds like the Morse pronunciation? How about *catastrophic*, which has an emphasis on the first and third syllable, and begins with a "c"? Or how about dah-dit, which is Morse code for "N"? How about *nanny*? This will be harder for words that end in several "dahs" in a row, since many words in the English language alternate emphasis between syllables, and usually do not end with an emphasis, but you could use sentences, too. There are also existing Morse code mnemonics that have been around for many years; you might be able to find them online, or purchase them.

^[4] • If you're a music lover, you can try associating Morse code pronunciations with tunes or melodies that are familiar with you. For example, the distinctive

beginning of Beethoven's Symphony No. 5 is short-short-short-long, or dit-dit-dit-dah, which is the letter "V", the roman numeral for "5" (as in Beethoven's 5th Symphony), and is rather appropriate for such a "victorious" tune, don't you think? During WW2, BBC broadcasters used this four-note melody to start off its radio broadcasts because of its association with the word "victory"![5]

6. **Have fun with it.** Want to get your friends into it? Learn how to blink code. That way, you can give an SOS blink when your friend just introduced you to a rather unpleasant blind date, for instance. Use written Morse code to write secret notes, or keep a diary in Morse, or tell dirty jokes without anyone knowing. Give someone a Morse code greeting card. Say "I love you" in Morse code (how romantic!). Whatever floats your boat, find a way to do it in Morse code, and you'll learn it much faster.

International Morse Code

1. A dash is equal to three dots.
2. The space between parts of the same letter is equal to one dot.
3. The space between five letters is equal to three dots.
4. The space between four words is equal to seven dots.

A	• —	U	• • • —
B	• • • —	V	• • • — •
C	— • • •	W	• — • —
D	• — •	X	• — • — •
E	•	Y	• — • • —
F	• • • •	Z	• — • — • —
G	• — —		
H	• • • • •		
I	• •		
J	• — — —		
K	• — • —		
L	• • — •		
M	— —		
N	• — —		
O	— — —		
P	• — • —		
Q	• — — •		
R	• • — —		
S	• • • —		
T	—		

TIPS

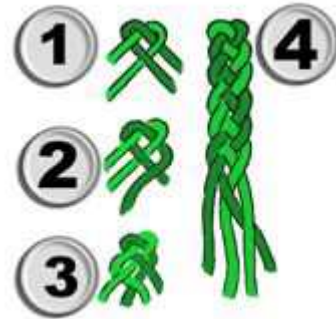
- Get a Morse Code app for your phone. Or look online for training software: it is very helpful!
- **To indicate that you have made a mistake** while broadcasting the previous word, transmit eight dots. This will tell the receiver of your message to cross out the last word transmitted before the signal.
- Listen very carefully. When learning try very slowly till you get the hang of it.
- **Practice!** When you have spare time, ask a friend or family member to sit down with you and listen to you transmit Morse Code. Give them a chart, and let them decipher your messages. Not only will this increase the knowledge of both you and your helper, it will also allow you to pick up on any mistakes you may be making or any bad habits that you are developing so they can be rectified before any problem develops.
- **Don't give up!** Learning Morse Code won't be easy; it's like [learning a new language](#). There are new letters, abbreviations, grammatical styles and many other things to learn. Don't be discouraged if you make mistakes, just practice over and over again until you perfect it.
- **Learning the Morse Code can be easy** with the right tool. Copy and laminate the chart below and then keep it in your wallet. You'll remember the code faster, as you'll remember where the letters lie on the tool. Read it down from the top. White is dit and colored is dah. You start with E & T, which are dit and dah. Going directly downward, read each line. Therefore, V is dit dit dit dah. Good luck.
- Do not use any visual charts as you do not train the ears through the eyes. Do not use any slow training methods as you will have to relearn letters to gain speed. The goal is to recognize letters then entire words instantly, not count dits and dahs. Computer program with Koch and Farnsworth methods is the way to go.

- **Put your newfound knowledge into practice!** Get an [Amateur Radio License](#), [learn how to use it](#), learn the proper etiquette when using it, and try out your Morse Code knowledge in a real world situation. See if anyone responds. If so, have a conversation. Get to know each other, ask any questions about Morse Code that you might have. Not only will you get some useful practice in, you might even make a friend!

<http://www.wikihow.com/Learn-Morse-Code>

How To Weave

Step by step instructions on how to weave material, vines, reeds, or what ever you can find on hand. It is simple to do and you can make ropes, clothing, groundcloth and the list is unending. The key to weaving is to take your time and not rush the job. An excellent material to weave is leather, especially if making a rope or sandle-like shoes. Look at each step closely, illustrated above, noticing which strand goes under and over what material. In figure 4, it seems a mess, to a degree, but it's really pretty clean and will eventually be completed.



Long strands of material that has been woven may be made into all sorts of clothing or even shoes, if needed. The key is to tie or sew the material together so instead of one long piece, you have folded it, secured it and fashioned something from your work.

In a survival situation you may have to use what is on hand and that means you'll likely be using some sort of plant. Vines, unless green and young, may prove hard to weave, due to stiffness, while any dried plant will not last long, even if you manage to weave it. Stick to young, bendable, plants that are easier to work with and will give you a better product when completed. Remember, by weaving a material you strengthen it as you fashion it into something useful.

Just take your time and during a survival situation you can weave your own needed items, using rope, string, rushes, grasses, or what natural material is on hand. Learn how to weave!

HOW TO SURVIVE THE WILDERNESS WITH JUST A KNIFE

Survival in a temperate environment is easy if you know how to. In the woods one can die from a number of different things. However, by simply having the knowledge and exploiting what you know, the woods can become a home and a new reality. By having a simple blade, one can fashion his own tools and his own means for survival.

NOTE: Before considering any of the information below, recognize that temperature defines precedence in the wilderness. If the temperature gets below 40 degrees at night consider fire your most important prerequisite. However if the temperature rises to greater than 90 degrees during the day, consider moving and working at night and sleeping under cover during the day.

STEPS

1. **Find Water.** First things first, you are stranded somewhere in a temperate wilderness during late morning, the worst case is that you do not know where you are. That is not a problem. You don't know where you are, but you know where you want to go...downhill. This is because water is held stringently by the laws of gravity and you want water first as you can only survive three days without it. Move to the lowest point you can find.
2. **Make friends with trees.** On your way downhill, educate yourself of three different trees.
 - White Birch. Look for a white tree with a paper-like material coming from it. This is an important tree, it's called the White Birch. Not only is the inner bark edible, but the outer bark can be used as a waterproof container (if it doesn't have any holes in it). Also, most people don't know this but you can cut a hole in the tree and get a spicy sweet sap a lot like a maple. Some other useful attributes are as follows:
 - One can cook soup in birch bark as it will not burn with liquid inside it.
 - Birch bark can be used as temporary rope
 - Birch bark, the white papery layer, makes excellent tinder for fire lighting
 - The white birch can be carved into a good walking stick.
 - Birch bark has been used in the making of native canoes.
 - American Basswood The second tree you should know is called a Basswood. This tree is really easy to recognize. It has grey, sometimes



veiny bark and some of the largest heart-shaped leaves to boot. Do not get this tree confused with a moose maple, which has leaves with three points. This tree is important, as it is going to be your source of rope, snares, straps and ultimately your backpack. You will start to see this tree as you get closer to water, it's thirstier than you are and can also be a source of water if you don't feel daft sucking on the side of a tree.

- Common Maple. The third and final tree you need to know is the common Maple. This is going to be your walking stick as well as your protection. It is a very hard wood with a clean grey-looking bark. Now picture a Canadian flag in your head, that is a maple leaf. If you don't know what a Canadian flag looks like, suggestion is to pick up a book and find out before you go into the woods.

3. **Cut some Basswood bark.** If there is no water, move to the base of a hill or a mountain where a stream or river will most likely run near its base. This is where that tree lesson will come in handy.



- Find a Basswood. As stated above, they love water and high banks.
- Use your knife to cut a horizontal line all the way around the trunk. Do this at the bottom and about four feet above that.
- Now cut one straight vertical line from the top line to the bottom one.
- Observe that the top line looks like a T where the two lines meet. This T is where you will dig your two thumbnails into the tree.
- Now gently pull these two flaps away from the white wood below. You should now have a curved floppy rectangle. Now the easy part:
- Cut this strip into as many smaller vertical strips as you can. Ideally they should be about 1/4 inches wide.
- Now flip these strips over to reveal a wet shiny layer, **THIS IS THE LAYER YOU WILL USE FOR ROPE.**
- Carefully pull the green outer bark away from this thin sheet of wood. Observe that the green part will be significantly thicker than the thin material that you want.
- Wrap these thin strips around themselves so that they each make a ring about 3 inches in diameter.
- Use your green junk to wrap up about three quarters of your new rope.
- Place this wide jumble of rope around your wrist so it will be out of the way.
- Use the other 1/4 of your rope to make shoulder straps, a belt, and most importantly a bicep strap to go on your upper arm for your knife.
- All your green bark scrap should be saved and strapped to you otherwise, using your new lashing or other strips of bark.

After all that work you will most likely be thirsty. Luckily all you have to do is go downhill to get some much-deserved water.

4. **Go mudding.** While you're getting some water, there is a very important step that will save you a lot of grief latter. While you're near water, it is important for you to cover yourself in a thin sheet of blue clay or dirt if no clay is available. This layer must cover every piece of open skin. This layer will be your *only* defense against black flies, deer flies and ticks. The best advice that can be given is to enjoy yourself, this step is very important and seriousness will not help your morale nor your situation. Enjoy the innocent child you left behind.

5. **Invite some friends.** After you have your armor, it's now time to set some snares. Find game trails, which should be littered all around the banks of your water source. Take off around 6 of your strips and tie a 1-inch diameter loop at the end. Slip the other end of your Basswood snare through this loop and prop it up above the ground at a level appropriate for the game trail you are occupying. Small trails speak towards small game, large trails should be



avoided. For rabbit, raccoon, quail and partridge, place the snare 4-10 inches above the ground. For added measure, one can rub mud around this loop to disguise the scent and the appearance of the freshly wrought basswood.

6. **Make Fire.** Now if the day is getting late, your best bet is to make a fire. It is often best to gather a lot of dry wood first, with sizes ranging from twigs to small logs. For multiple fire starter methods, type "how to make a fire" into the wikiHow search directory. The fire bow method works particularly well with basswood.



Before lighting your fire, clear a 6-foot circle around your fire site. Choose a location without branches immediately above the fire. Collect as many head-sized stones as possible to ring the fire and keep it from spreading. However, a ring of rocks will trap and reflect heat inward making it easier to keep going. One of the most important aspects to remember about fire is to respect it. Keep it contained.

Once you have your fire, it is important to keep the flame below two feet, that way your fire will not take much in the way of fuel. You do not want to go back into the forest for more wood. Insects will maraud you. Your thin coat of mud or clay will block their bites but not their sound. On a psychological level, the simple fact that they could still get in your eyes and ears should keep you well stocked before you start your fire.

7. **Build a shelter.** One does not really need a shelter in average conditions. However if you do need one, or expect rain, the main thing is to keep it small, dry and off the ground. Never spend time building small cabins or even a shelter bigger than your body. This is a waste of energy and resources, and it's easier to keep heat captured in a smaller space. Large clumps of moss that you can use to cover a small wooden skeleton work well. Also, Birch bark makes for an excellent shingle. Your best bet, however, is to use massive amounts of softwood and ferns. If you are quick, you can gather enough for a six-inch barrier that will shed rain as well as hold heat. Dry leaves also work very well for water-proofing. If you are expecting rain, make the layer of leaves and whatever as thick as possible. (3 feet is almost completely water-proof.) In two hours one cannot only sleep comfortably but dry and warm.



8. **Stay conscious of the fire.** As you sleep, make sure you are aware of just how far away your fire is. Grogginess could have you lying right on top of it with no one there to put you out. If you do not feel comfortable with a fire going while you sleep, you can put it out and dig a hole where you are to sleep and fill it with the coals. By putting a layer of dirt over this spot you can lie on top of it and sleep very comfortably.



9. **Look for breakfast.** When you wake, be aware that insects come out at dawn. Now is the time to pick up your metabolism and move quickly, as the insects can still get in your eyes. Also, movement trains your body to provide its own heat through exertion. The only problem is that one's motivation to move is usually lacking. Your motivation should stem from the fact that you had set 6 snares the previous day and one of them might hold breakfast lunch and dinner. So to raise your body heat, move from snare to snare. You may have gotten lucky.

10. **Tighten that belt.** Now it is important to prepare yourself for two contingencies.
- The first is that you got absolutely nothing and have a very hungry and downtrodden demeanor. If this is the case, simply go to your nearby Birch tree and cut a 4-inch triangle out of the bark. Turn one point towards the ground. You can eat the underside of this bark, as it is very nutritious. Also, a small trickle of sugary sap comes out of the bottom point of this triangle. Don't worry if it's not much. Surprisingly, a human can survive off a tablespoon of food a day for a limited time.
 - The second contingency is that you got something, most likely a rabbit or a small game bird. There is a pretty good rule for eating things on animals: **Don't eat anything that looks inedible.** Otherwise, almost anything's fair

game if you cook it well enough ...
and by well enough I mean burnt.

- Here's another rule with food:
Don't eat where you sleep or
sleep where you eat. Scraps and
entrails will attract predators (i.e.
BEARS). Discard bones, entrails,
beaks, etc., far from your shelter.



11. **Follow that water.** Now that you know how to gather food and water, it is important to recognize the other use of rivers. Humanity was not build upon the backs of man, but on the banks of rivers. To find humanity, simply follow your river downstream. Remember not all streams lead to civilization, the stream could end up going underground for miles and then you would have wasted a lot of your energy on nothing. Using all of the things stated above, a person can live indefinitely in the woods.



TIPS

- For Band-aids, seek out the common spider. Their webs can be inserted into open gashes or cuts to stop bleeding. A plant called yarrow (*Achillea millefolium*) can also be used to stop bleeding. It also has other uses.
- For energy, seek out soy plants and sources of vitamin B as well as sugar foods and fruits, such as berries, to provide great amounts of energy on an empty stomach. Be very careful, and make sure you don't eat the wrong vegetation, for many plants are poisonous.
- For Fire Starter, seek out the fir tree. The bubbles on fir bark can be popped to reveal highly flammable sap.
- For Antiseptic, seek out the common honeybee. The grey oozy substance they use on the inside of their nests is one of the worlds greatest antiseptics.

WARNINGS

- **Bears**
 - Berries are common in the wild and make excellent meals. However, beware situations like the one shown to the right. Bears are often great connoisseurs of berries and will often inhabit that source of nourishment.

Most bears will retreat if you encounter them in the open. However, they might see you as competition in such a scenario and attempt to remove you from the situation. The picture below shows a blackberry patch (A) and a rather large rump print on the ground next to the bush (B). This is proof that a bear will sit in these bushes to feed. Do not go near bushes if you hear rustling sounds.

- The best experience with a wild bear is the one that never happened. Like most animals, they naturally fear man. Making lots of noise as you hike about (clanging metal, blowing whistles, singing, banging sticks, etc.) will alert them to your presence and usually make them move away. Obviously, this is counterproductive when you're hunting. One should note that grizzlies and polar bears are curious animals and will go towards unnatural sounds. However grizzly and polar bears are often found north of habitable regions. 98% of the world's grizzly population being in Alaska.
- Never approach a bear cub. Trust that even if you don't see her, Momma is nearby. She won't be happy with you. If you see a cub, walk quickly and steadily away.
- If you have Marijuana do not let smoke linger or burn from it, Bears are attracted to the smell, unless you need to lure one. Blood also attracts bears and other predators, either burn old bandages or bury them away from your shelter.
- **Mountain Lions** Mountain lions and large cats are the exception to most game rules. You cannot play dead with a mountain lion and you can't outrun them. Also even if you move away slowly and get them out of sight, they will undoubtedly follow you waiting for any vulnerability. The best advice is to be vicious and decisive. They will come at you and dodging is usually not an option. However there is a technique to be used. Hold your left forearm in front of your neck and wait for the lion to bite. It will bite your forearm in order to remove the defenses around your neck. With its jaws locked quickly plunge the length of your knife upwards into the bottom skin of its jaw. Because of the head trauma it may not let go, plunge the knife into the skin around its jaws, twist and push away in one motion. If it is not dead it will most likely be trying to rub its head against rocks or trees. Run in a zig zag pattern away from the wounded animal. Wait for a half hour and return to make sure it is dead. Now you have food. Apply honey to spiderweb and place both on your arm. Check periodically and make sure no blood gets out as it could attract other predators.
- **Ticks**
 - Ticks can be one of the most psychologically and physically taxing parasites in a temperate environment. They are small eight legged arachnids, that like insects are attracted to heat sources. They will often times lay in wait in grass two to three feet high where they will then transfer to your clothing. From there they will go to your head or your crotch, the two highest sources of heat on the human body. From there they will secrete a local anesthetic that they use to hide their movement as they bore headfirst into your skin. In this state they look like a piece of corn stuck loosely to your flesh. However when you touch them their legs pop out and wriggle making even the hardest of woodsmen cringe. Several removal methods and misconceptions will be addressed below.

- Never burn a tick out. Often times their guts will spurt into the open cavity that they use to feed, namely under your skin. If you use this method you must burn the skin an inch around the area of infestation or you run the risk of getting Lyme disease and rocky mountain fever. There are better, and less painful ways of tick removal.
 - Never yank the tick out, their anchor like jaws will stay under your flesh and may give you rocky mountain fever or Lyme disease.
 - Removal method: Find a fir tree. Look for a Christmas tree with bubbles on the bark. Grab a stick, pop the bubble and place that end flatly under the new hole, now roll one end of the stick up over the bubble with pressure applied, use this method to squeeze the sap out. This should gather sap on the end of the stick. Now spread this sap over the tick generously. Pop more bubbles if you need to. Now with the pitch on your arm find a very oily plant or tree. Ash works well. Now observe that the tick has pulled himself up a bit. spread as much ash oil on the pitch as you can and repeatably wipe the sap off. The tick will pull himself up because he cannot breath. After the tick has been rubbed off spread more oil over the area to lift up the sap, if all else fails cover the spot with peanut butter, or animal fat, wait, and then wash your hands in water, the sap will come off quite easily. Also note that the vitamin C in the sap has made the skin more supple.
- **Intestinal Parasites** One effective way is to find a fern that grows in most temperate environments. This fern is called pasture brake. During the early days of its lifespan it looks like a small fiddlehead with brownish [white hair growing](#) off from it. The typical species of pasture brake is four inches tall. During this stage it is edible both raw and cooked. It is, however a mild poison that changes the environmental conditions of your intestine making survivability a tall order for any parasite. As this plant gets older it becomes more poisonous. If the plant is tightly curled you can eat one every hour or if it is fully grown, one every other day to get rid of the parasite.
- **Poison Ivy**
 - Poison ivy is a small three leaved plant that usually lies very close to the ground. In order to turn away any would be predator its leaves contain a chemical called Urushiol, which bonds with skin cells and creates a very prominent and uncomfortable rash that can last as long as five to six weeks. If you have made contact, early stages will show a simple rash. However, for severe reactions expect significant blistering and/or oily discharge. Treatment methods and myths are listed below.
 - Never burn poison ivy: its smoke is highly toxic. Also, Urushiol cannot be destroyed or dissolved by ordinary means.
 - Never cut out the blisters or attempt to remove them. The ooze that comes from them is not contagious and will not spread the rash under ordinary circumstances.
 - Myth: Clothing will not protect you from poison ivy. Urushiol will seep through clothing in as little as fifteen minutes. If you know you have come into contact, do not physically touch the area as the urushiol will spread. Instead, remove the article with thick cloth or bark covering your hand and

anchor it in moving water for at least an hour. After some time the urushiol will leave the article.

- Useful method: If contact is made, in less than seven minutes the chemical can usually be washed off with soap before it bonds with your skin cells. However the chemical is an oil, so soap is needed to wash it off. In other words, water will not work alone. However, this method is highly debatable as soap can also house the chemical and spread it in the same fashion.
- Useful method: Immerse your body in water for an extended period of time. Oil is lighter than water so the Urushiol may, as matter of physics, remove itself from your skin before it has bonded.
- Useful Method/Myth: Alcohol will not dissolve or remove Urushiol by itself. However, it may dilute it enough so that it can be drawn out with a spongy material or cloth.

Conclusion: Urushiol cannot be pulled away from the flesh once it is bonded; the only thing that native technology can do is to numb the itch or treat the reaction not the chemical itself. Therefore, the only one that can truly treat it effectively is a doctor armed with Tecnu or Ivy remover.

<http://www.wikihow.com/Survive-the-Wilderness-With-Just-a-Knife>

HOW TO SHARPEN A KNIFE

There are more non-functional knife sharpeners on the market than any other product (with the possible exception of no-effort exercise machines). However, there are plenty of ways to sharpen a knife that do work. This article points out the most common mistakes and offers links to resources.

STEPS

METHOD ONE: USING A WHETSTONE OR A DIAMOND STONE

1. **Pick an angle to sharpen your knife.**

If you already know what angle your knife is sharpened at, you'll probably wish to sharpen it at this angle again. Sharpening at a different angle will take significantly more time and may take a few goes before any rough angles are smoothed out.

- If you don't know the current angle, ask the manufacturer of your knife or inquire at a knowledgeable knife shop to determine what angle is appropriate for your knife.
- If you have to make a gut decision, choose an angle of 10° - 30° per side. Shallower angles make a sharper edge that doesn't last as long; steeper angles are more durable, so 17° - 20° is a good compromise between the two.



2. **Lubricate your whetstone or diamond stone with a small amount of mineral oil.** Look for honing oil, a light kind of mineral oil. Honing oil with both lubricate the whetstone, making it easier for the blade of the knife to pass over the stone, as well as keep the steel shavings (the byproduct of sharpening) from clogging the stone's pores.

- Check with the manufacturer's guidelines for your stone regarding lubrication. The most common sharpening stones are carborundum stones, and are designed to be used wet or dry, but are destroyed when oiled. However, there are some stones that are specifically designed for oil, and will generally be labeled as "oil stones".

3. **Use an angle guide to control your edge's angle, if available.** A sharpening guide is a small tool that's placed underneath the knife in order to maintain a constant angle when scraping the knife across the surface of the stone. Otherwise, you will have to control the angle by hand, which is hard and requires a well-formed perception of angles.



- One of the most difficult aspects of sharpening a knife is getting the angle right. To make this process a bit easier, try painting the very tip of both sides of your blade with a sharpie pen. Then, throughout the sharpening, inspect whether the marker is being removed during the process.

4. **Start off on the rough grit side of the stone.** Check the grit on your stone, or the packaging that came with the stone, to identify which is which. In general, whetstones and diamond stones each have different grits on either side. The rough grit side is used to **grind** the steel down, while the fine grit side is used to **sharpen** or **hone** the knife. The grinding process comes first, so you start on the rough grit side.

5. **For a symmetrical edge, sharpen the knife by dragging it across the stone in the opposite direction you would move it to slice a thin layer off the stone.** This allows a burr to form and prolongs the stone's life.



6. **Continue grinding at this angle until your grind goes roughly half way through the steel.** This doesn't need to be precise, just well-estimated.

- For a one-sided edge ("scandi grind", "chisel grind", etc.), do not flip the knife when instructed to do so by this article.



7. **Flip the knife over and sharpen the other side of the blade until you create a new edge.** The easiest way to determine that you have removed enough metal is to sharpen until you have raised a **burr**, a feature that steel will naturally form when one bevel is ground until it meets another.

- Burrs will generally be too small to see, but you can feel it scraping/catching on your thumb if you stroke away (dull side of the knife to the sharp) from the edge. Finer stones produce smaller burrs, but they are still there.



8. **Flip the stone over and begin sharpening one side the blade, this time using the finer grit.** Your goal here is to smooth over and eliminate the burrs

created by sharpening the knife over the coarser grit. This transforms the blade edge from a ground edge into a finer, honed edge.

9. **Flip the knife and begin sharpening the one side of the knife on the fine grit side of the stone.** Again, make sure you hit both sides of the knife with the fine grit.
10. **Begin alternating swipes on the fine grit.** Sharpen one side of the knife with a single stroke, then immediately flip the knife and sharpen the other side. This is several times for best results.
11. **If you wish, further polish or even stop the edge to the desired sharpness.** This makes the edge better suited for "push cutting" (cutting directly into materials, pushing straight down without sliding the blade across the object) but generally impairs slicing ability: without the "microscopic serrations" left by grinding with a stone, the blade tends to not bite into things like tomato skins.



METHOD TWO: USING A HONING ROD (SHARPENING STEEL)

1. **Use a honing rod in between sharpenings to keep your blade from degrading.** The honing rod, or simply "steel" as they're often called, aren't normally used to resuscitate a dull blade from the proverbial graveyard. Instead, they're often used to keep knives sharp in between use.
 - Using a honing rod regularly delays the need to use a whetstone or a diamond. This is a good thing: Using whetstones and diamonds shave metal from the edge of your blade, reducing the knife's lifespan. The less you use your whetstone, the longer your knives will thrive.
 - What does a honing rod do? A honing rod realigns the metal in a blade, massaging small nicks, indentations, and flat spots away. Compared to a whetstone, it does not remove any significant amount of metal from the blade of the knife.
2. **Hold the honing rod in your non-dominant hand.** The rod should be held at a comfortable angle facing away from your body. The rod tip should be elevated above the rod handle.
3. **Hold the knife firmly in your dominant hand.** Your four fingers should be holding onto the handle, while your thumb can be placed on the spine of the knife, far away from the blade edge.
4. **Hold your knife at approximately 20° in relation to the honing rod.** Your angle doesn't need to be exact, just approximate. Whatever angle you decide to choose, or unwittingly end up choosing, make sure to maintain the same angle throughout the honing process. Changing the angle used during the honing

process won't smooth out the metal in the blade as much as using a consistent angle will.

5. **Maintaining a 20° angle, move the knife across the top half of the honing rod.** Try to start this motion with the heel of the knife touching the rod and end it with the tip of the knife touching the rod.
 - In order to master this process, you'll need to move your arm, your hand, and your wrist. What's especially important to get the right action is moving the wrist. Without moving the wrist, you won't be able to sweep the entire blade — heel to tip — across the honing rod.
6. **Maintaining a 20° angle, move the knife across the bottom half of the honing rod.** Using the same sweep of your arm, hand, and wrist, gently move the knife across the lower half of the rod. Use only as much pressure as the weight of the knife itself. After completing both a top- and bottom sweep, you've done one revolution.
7. **Do a total of 6 - 8 revolutions with your honing rod before each use of the knife.**

METHOD THREE: USING A COFFEE MUG FOR QUICK RESULTS

1. **Place an old coffee mug upside down so that the bottom of the mug is exposed to the air.** In a pinch, a coffee mug can serve as a surprisingly effective sharpening tool if you don't have any fancy equipment. The ceramic material of a mug is a coarse-enough material to get good results. Indeed, some honing rods even use ceramic material to keep a blade honed in between sharpenings.
2. **Maintaining a 20° angle, sweep one side of the blade across the grit of the coffee mug several times.**
3. **Maintaining a 20° angle, repeated the process using the other side of the knife.**
4. **Alternate sides of the blade for the final two or three sweeps.** Take one side of the blade and run it across the coffee mug, then turn the blade around and hit the opposite side. Repeat this pattern several times.
5. **Finish the process with 6 - 8 swipes of your blade across a honing rod.** Smooth out any burrs or kinks in the metal with several swipes on your trusty honing rod.

Tips

- Electrically powered stones and grinding wheels need to be used with great care. Heat generated by the stone while grinding with these devices can anneal (soften) the steel, causing the knife to dull quickly with use.
- Cheaper stainless steel kitchen knives won't hold an edge well; don't get discouraged - it may not be your sharpening technique. They will sharpen just fine, but will dull very quickly. What's happening is that the edge is rolling over

because the steel is soft. Try using a steeper sharpening angle or a knife with harder steel.

- Sharpening stones work best with a lubricant to help keep the stone free of particles. Use either an oilstone with a neutral oil such as mineral oil, or water stones with water. Once you start using a stone with oil, you cannot switch to water.
- Some experts recommend sharpening as if trying to slice a thin layer or decal off the stone. Don't consider doing this without significant experience: it is typically bad advice; most people don't hold the correct angle this way. You instinctively raise the blade until you feel and see the edge working. This creates larger edge angles and thicker bevels as time goes on and the results gradually deteriorate. The more you sharpen, the duller it gets. Sound familiar?

Warnings

- If you do not remove enough metal to create a new edge, you will leave some of the dull edge in place. A dull blade (or a blade with dull spots or nicks) will reflect light from the very edge of the blade. A razor sharp knife edge will not show "bright spots" when you hold it blade up under a bright light. You will need to remove enough material from the sides of the bevel so that the edge stops reflecting light.
- Don't drag your fingertip across the newly sharpened edge to see if it is sharp. A better test is to try to cut a single piece of newspaper while holding the paper loosely between two fingers.
- If you are using an oil stone don't use water on the stone, as it will cause the pores of an oil stone to clog and become useless for sharpening.
- Always be careful around recently sharpened knives (and all knives in general) for knives are one of the causes of accidents around the house

Things You'll Need

- Knife
- Flat, abrasive surface: Arkansas stone, rock, sandpaper...
- Angle guide or a steady hand

<http://www.wikihow.com/Sharpen-a-Knife>

WATER

[Some Facts About Water](#)

[How to Make Water In The Desert](#)

[Drinking Water Available Immediately](#)

[Where to Find More Water](#)

[What Makes Water Unsafe to Drink](#)

[How to Make Water Safe to Drink](#)

SOME FACTS ABOUT WATER

Water is VERY heavy.

One gallon of water weighs about 8.5 pounds inside a thin-walled clear plastic water jug.

You can't carry enough water with you between locations to last for very long. If one person consumes 2.75 quarts of water each day, then one person will need 250 gallons of water per year. A family of four will need 1,000 gallons of water per year. One-thousand gallons of water weighs about 4.25 tons. (And that does NOT include water for washing your hands or for washing dishes.)

With the passage of time, bottled water will gradually become unfit to drink for a variety of reasons. However, it can be reprocessed to make it fit for human consumption. Several different options are discussed below.

If commerce were disrupted by either a natural or manmade disaster, one of the first things a person should do is evaluate their water situation. This involves three different but related issues:

1. How much water is on hand right now?
2. Where can more water be obtained?
3. How can that water be made safe to drink?

The three basic necessities which sustain life are:

1. air,
2. water, and
3. food.

The **Rule of Threes** states that a person can live for:

- three minutes without air,
- three days without water, and
- three weeks without food.

Without water or any other fluids, a person will die in about three days. Therefore, since water is one of life's most basic necessities, it is a subject we should not take for granted.

SOME INTERESTING FACTS ABOUT WATER AND THE HUMAN BODY

The Human Body:

- 60% of our body is water.
- 75% of our brain is water.
- 83% of our blood is water and it transports nutrients and oxygen to the cells of our body.
- Water is necessary to properly digest food. (Note: If you don't have water, then do NOT eat regardless of how hungry you become.)
- Our urine is almost all water and it is how our body flushes and rids itself of toxic wastes.
- Water facilitates normal bowel movements which helps prevent constipation.

In one day the average person loses between 2 to 3 quarts of water through their urine, sweat, and normal breathing. If a person doesn't replace that lost water, then dehydration begins to occur.

- At 2% dehydration, thirst is perceived.
- At 5% dehydration, a person becomes hot and tired, and strength and endurance decrease.
- At 10% dehydration, delirium and blurred vision become a problem.
- At 20% dehydration, a person dies.

Pause and reflect on that for a moment. A person loses 2 to 3 quarts of water every day as a result of their normal body functions. Which means if a person doesn't get any fluids for about three days, they will die.

Most people have never thought about the above because they have NEVER been personally confronted with a extended shortage of fresh safe drinking water at any time in their lives.

HOW TO MAKE WATER IN THE DESERT

Dehydration can set in quickly in the desert. If you are lost in a barren landscape you can actually extract water from soil or plants through the process of condensation, using the techniques described below.

PIT-STYLE SOLAR STILL

- Steps

1. **Survey the land for signs of dried out river beds.** These locations are the best place to seek moisture.



2. **Dig a few curved holes** (the more the better) about 19 inches (50 cm) deep so that the moist subsoil is clearly visible.
 - If you are in dryer conditions, the moist subsoil may be slightly deeper. Dig until you find it.
 - Do not dig the hole/holes in the shade. This process needs direct sunlight to work correctly. Look around and make sure that shade won't move over your solar still before evening arrives.
 - Urinating in the hole provides extra moisture and is sanitary because only the water evaporates.



3. **Throw any plants into the hole/holes.**



4. Place an open coffee can, mug, cup or canteen in the center of each hole.

- If you have a length of plastic tubing, you can run it from the bottom of the coffee can out the edge of the hole. You can use the tubing to suck the water from the can without dismantling the still.

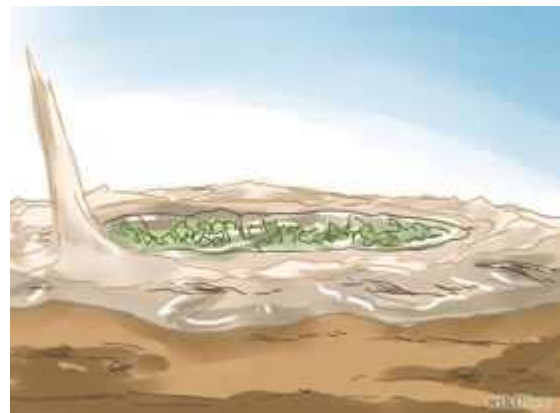


5. Lay a taut piece of clear plastic wrap across the top of each hole.



6. Create a seal by pouring sand in a circle around each hole along the outside of the plastic wrap.

- Pour the sand 1 to 2 inches (2.5 to 5 cm) from the edge of the plastic wrap. Ensure that there are no gaps. The plastic wrap must seal the hole shut; if it is punctured, the water will not condense.



7. **Place a small to medium sized rock in the center of the plastic wrap so that the plastic wrap dips to a point above the can.** Keep the plastic wrap from touching the can or else the water will not drip into the can.



8. **Wait for the sun to evaporate water out of the moist soil and any plants within each hole.** The water will [condense on](#) the plastic wrap because it cannot escape the hole and will drip into the can. If you have installed plastic tubing, drink from that.



9. **Once the sun dries the subsoil in a hole, just dig another.** Alternatively, you may dig deeper using the established hole/holes.



PLANT CONDENSATION

1. **Using 550 paracord (or similar material), tie a clear plastic bag on the end of a plant or small tree branch.** Do not use tape - the heat will prevent the tape from adhering effectively to the bag.



2. **Make sure the bag is sealed as tightly as possible around the branch.** The plant transpires water during the process of transpiration.



3. **Water vapor will collect and condense in the bag.** Make sure the water collecting in the bag won't drip out.



4. **Wait until evening for maximum condensation before removing the bag.**



5. **Switch the bag to another branch and repeat.**



6. **Expected yield is one cup of water per large bag - you will need several of these to survive.**

Tips

- Don't waste time while you're waiting. Instead, make a number of stills of different designs to increase your water harvest and as a safe guard in case your first still fails.
- Make sure you allow each process to take place in its entirety. Due to the intense heat of the desert, this should take a couple of hours; in places with less sunlight it can take half a day.
- The Pit-style Solar Still technique can also be used to purify dirty water and urine [1][2]. To do this, replace the container from an existing hole with a vessel holding the tainted water, doing everything else the same. If you don't have a container, pour the tainted water directly into the hole.

Warnings

- You may lose more water perspiring while digging than the still will generate for you in the end, depending on the moisture in the soil, how hard the soil is to dig, and what you're digging it with.
- The plant condensation method may extract poisonous contents from the plant, such as cyanide. Thus resulting in death if the water is consumed. Some plants will produce cyanide with this method, some won't.
- Contrary to what is written in some popular survival books, the solar still will not provide adequate water to keep a person alive, even if it is constructed in moist soil. It is a last resort.

<http://www.wikihow.com/Make-Water-in-the-Desert>

DRINKING WATER AVAILABLE IMMEDIATELY

If you are at home when the emergency occurs, then immediately check to see if the faucet water pressure is still on. If it is then fill every possible container in the house that will hold water and not leak. For example: pots, pans, plastic containers, drinking glasses and drinking cups, bowls, and every sink and bathtub.

If the water is off, you still have three sources of clean drinking water:

1. Ice cubes in the freezer, and
2. Water inside your water pipes, and
3. Water inside the hot water heater.

Even if the water pressure is off, there is still some water inside the water pipes in your home or apartment. That water can be drained from the water pipes (using gravity) by opening the **LOWEST** cold water faucet in your home, which will usually be on the first floor, or the basement, or an outside water faucet. However, you will also need to open the highest cold water faucet in your home to allow air to enter the cold water pipes so the water can flow out the lowest water faucet into your collection container. This will drain all the water out of your cold water pipes but NOT your hot water pipes.

Most hot water heaters contain 40 gallons of clean water. However, BEFORE you remove that water you MUST turn off the power or turn off the gas to your hot water heater, or you could start a fire. Then open the faucet at the bottom of the water heater to gain immediate access to 40 gallons of reserve clean drinking water. This is enough emergency water to last a family of four for 20 days if they ONLY drink the water and don't wash with it. This is the BEST source of reserve drinking water for the average family because it is constantly being used and replaced inside the hot water heater prior to the emergency. Therefore it will be fresh and clean at the beginning of an emergency. (Note: Some hot water heaters do NOT have an easy access water valve at their base. Prior to an emergency you should take a look at your hot water heater and determine if you can get to the water inside your heater. If you can't, then you might consider having a plumber install a standard water faucet valve in the water line at the bottom of the hot water heater.)

Another source of water is canned foods because many canned foods are packed in water. When you open a can, serve the water in the can with the food. Never throw the canned water away if you are low on water.

Water that isn't safe to drink is toilet tank water and water inside the mattress of a water bed.

If you had the foresight to plan for an unexpected emergency, then you should have a stash of clean empty 2-liter plastic soda bottles stored somewhere out-of-sight. They are really nice for storing water because they are free (after you drink the soda), they are made of food grade plastic, they don't leak, they have a screw on cap to keep the

water clean, they have an extremely long shelf life, and they are a convenient size to handle and use. The major disadvantage of the 2-liter bottles is that don't stack well on top of one another.

If you have empty one-gallon plastic water jugs then you should also consider saving them for a future emergency. However, clean empty plastic milk jugs are NOT a good option because they will deteriorate with the passage of time and begin to leak.

After inventorying your water, the next step is to ration your water. During normal times, one person consumes about 3 quarts of water per day. No one I know drinks that much water each day. However, all of us drink some water, plus a variety of other fluids (coffee, tea, soda, juice, or whatever appeals to you). During hardship conditions, a person can survive on two quarts of water per day (two quarts is one-half gallon). If water is really in short supply, then one quart per day will keep a person alive, but they will begin to slowly dehydrate.

Everyone knows better, but after an extended period of time with little or no water, a person will drink all the water they can when it suddenly becomes available. If you do this, you will get sick. Force yourself to S l o w - - d o w n. Drink one cup of water every 10 minutes. Give your system a chance to absorb the water and send it where it is needed most. Don't overload your system and kill yourself.

WHERE TO FIND MORE WATER

You have inventoried and carefully rationed your water, but the emergency continues longer than you anticipated and you are running low on water. Before your water completely runs out, you should start replenishing it. Let's examine a number of different alternatives.

WELL WATER

If you live in the country, or if you have a water well on your property, then you already know there is water in the bottom of that well. Drilled wells can be anywhere from about 25 feet deep up to a thousand feet deep or more. For approximately \$1,000 it is possible to purchase a heavy-duty manually-operated complete hand water pump for wells that are 200 feet deep or less. It is not possible to hand-pump water from wells much deeper than about 200 feet. However, there is a very CHEAP way to get water out of almost any well, regardless of its depth.

If you know your electricity is going to be off for an extended period of time, and you are out of drinking water, and you have no other way to get drinking water, then you can manually remove the water from your well. There are many different well configurations but a typical one is illustrated in the picture on the right. First you **MUST** turn off the electrical power at the main circuit breaker box, even if the electricity is off. Then disconnect the electrical wires at the top of the well and protect them so they do not touch one another or any other object. You may also need to disconnect the plastic pipe or hose connected to the top of the well piece. Next you will need the correct size wrench to remove the large bolts which secure the top piece to the well. After removing the bolts, remove the top piece and you will probably find three things: a very long flexible heavy-duty hose, a water-resistant rope, and some electrical wiring, all of which go down into your well and are attached to the well pump in the bottom of the well. You can gradually pull up on the rope (or the flexible hose if absolutely necessary) and it will bring the well pump up out of the well. Don't pull on the electrical wiring because it is not intended for that purpose. After removing the well pump you will have exposed the entire shaft down to where your water is.

Depending on the depth of the well, the diameter at the **bottom** of the well shaft will probably be a little **smaller** than the visible diameter at the **top** of the well shaft. Therefore, select a container that is at least 1 or 2 inches smaller in diameter than the well opening at its top. The container can be almost any length up to about 18 inches. The container should have a large mouth on top to allow water to enter and air to escape. One option would be an empty two-liter plastic soda bottle with its top cut off.

The next step is of critical importance. Untie the wet end of the well rope from the well pump. Tie the opposite dry end of the rope to a secure object. This will keep the rope from falling into the well if you lose your grip. Then **securely** attach the wet end of the well rope to the container. If the container somehow works itself loose from the rope, then you will NOT be able to get the container out of your well shaft. Also remember

the container is going to be HEAVY with water when you pull it up. One option would be to make a strong net and put your container inside the net. Then tie the rope securely to the net.

Then put a relatively heavy clean, sterile object in the bottom of the container so the container will sink when it reaches the water level. Then slowly lower the container on the end of the rope by hand until it reaches the bottom of the well. You will know you have hit bottom when the rope has some slack in it. Wait for the container to fill with water and then pull it up. Repeat as often as required. When finished, carefully cover the exposed well head to prevent foreign materials from entering and contaminating your well water.

RAIN WATER

For the average person, the best source of replacement drinking water will probably be rain water. Although this is an excellent source of safe drinking water, it is unpredictable in regards to timing and quantity. However, for most people, this is probably the cleanest source of replenishment drinking water they will have access to on a regular but intermittent basis.

Regardless of where you live in the world, if you can catch the rain water BEFORE it comes in contact with anything, then it is safe to drink without any special treatments. Even when you take acid rain into consideration, this is still a true statement. However, if there is a nuclear, chemical, or biological war at some point in the future, then rain water may not be safe to drink for some period of time. You will have to use your own judgment in that situation. One of the portable commercial water filters described below would be appropriate in those types of unusual and hazardous situations.

If the air contains smog, pollen, or any other unpleasant stuff, then the rain will usually clean that stuff out of the air during the first 20 to 30 minutes of a good rain shower. Therefore, when it begins to rain you should wait about 30 minutes and then start collecting the clean rain water in a container. (Note: If you are seriously low on water and you are forced to collect the rain water during the first few minutes when it starts to rain, then you should process that water through one of the filters described below.)

Be creative. Think about what you have available that you can put outside to catch and hold rain water, or channel rain water through a partially open window into a big pot. Remember that it usually rains one-inch or less each time it rains. You need a large surface area to collect enough rain water to drink. A drinking cup or glass will not be enough. Even a 5-gallon cook pot is too small to just put outside by itself because it will only collect one-inch of water in the bottom of the pot.

Something like a child's inflatable swimming pool would be ideal, if your family already owns one. A 6-foot diameter pool would collect about 17 gallons of water if it rained one-inch. An 8-foot diameter pool would collect about 31 gallons of water if it rained one-inch. (Note: One gallon of water = 231 cubic inches of water.)

Or you could secure a clean 10' by 12' tarpaulin (or a clean thick sheet of plastic) in a manner where it slopes downward into a "V" shape towards a large 5-gallon pot (or other large container). Tarpaulins are commonly called tarps. With this size tarp you could collect about 70 gallons of water if it rains one-inch in your area (if you keep emptying and replacing your 5-gallon pot). However, you will need to secure your tarp very carefully because it is frequently very windy during a rain storm. Determine the primary direction in which the wind is blowing and then secure your tarp facing the wind at an upwards angle so the wind will blow a lot of the rain onto the surface of your tarp where it can collect and be channeled down into your water storage container.

In many areas it usually rains LESS than one-inch each time it rains, so it would probably be a good idea to use several tarps to collect rain water when it does rain. Many different tarp sizes are available, but for collecting rain water a tarp between 6' by 8' up to about 10' by 12' would be ideal. Smaller tarps don't cover enough area nor do they have very many other practical uses. Larger tarps are too heavy and they also have a limited number of other useful applications.

If you are trying to decide between an inflatable swimming pool or a good tarp, then the tarp would be the better choice. It is usually less expensive, more durable, easier to transport between locations, easier to set up and take down, requires less storage space when not in use, and it will provide an overhead shelter if you need to do some unexpected camping. When camping, the two most useful items are a good hunting knife and a high quality tarp. Another option for collecting rain water would be to put clean bed sheets outside your windows. Let them get drenched in the rain, and then bring them inside and ring the water out of them by hand into a pot. Then stick them back out into the rain again. This is NOT the best method, but it will provide some drinking water.

If you live in a tall apartment building with a flat roof, then you might consider collecting rain water on the roof of your building using the large tarp or heavy-duty plastic sheet described above.

If you live in a house, you could collect the rain water from your roof gutters at the end of the down spouts. However, since the rain water has already been in contact with your roof, you will need to process it using one of the methods described later. The easiest way to collect roof rain water is to remove a few feet from the bottom of the gutter downspout and then put a large plastic container (or water barrel) directly beneath the shortened gutter downspout. The first few minutes of rain will wash a lot of stuff off your roof and down your gutter, so don't position the water collection container below the downspout until after it has rained about twenty-minutes.

If you are camping, then you will probably be sleeping under a weatherproof tarp, or you will have a rain fly above your tent. By using a little creative thinking, you can frequently set things up so the rain water runs off your shelter into a big pot or other container. This requires a little ingenuity on your part depending on what you have available, but I mention it because some of you will figure out a way to make this idea work for you.

Regardless of which method you use to collect the rain water, you will need to save the majority of your rain water until the next time it rains. Once again, if you have anticipated the possibility and seriousness of this type of unexpected emergency, then you should already have a reserve supply of clean, empty two-liter soda bottles or empty one-gallon plastic water jugs in which to store and save your rain water.

THE MORNING DEW

If it doesn't rain, then you could go outside at dawn and collect the morning dew. How? Take a clean thin dish cloth or thin wash cloth and wipe it gently over the damp grass and other non-poisonous flowers and shrubs. Periodically ring the water out of the cloth into a bowl. Repeat. This is very hard work that yields very small quantities of water. However, if you are low on water, this may be your only way to stay alive.

SNOW OR ICE

Bring the snow or ice inside your house and melt it down into water. You will be surprised at the small quantity of water you get from a big bucket of snow. If you are in the woods, put the pot of snow near the campfire and wait for it to melt.

If you have a black plastic trash bag, then put some snow inside the bag and place it in the direct sunlight to melt the snow.

If necessary, you can put the snow inside a small or medium size container. Then put the capped container inside your clothing (but not next to your skin) and your body heat will gradually melt the snow into water.

If you are concerned about the cleanliness of the snow, then you can boil the resulting water for 1 or 2 minutes before you drink it.

Never melt snow or ice inside your mouth. It will NOT relieve your thirst and you will dehydrate more quickly. Always melt the snow or ice first and then drink the resulting water.

GROUND WATER (OR SURFACE WATER)

Ground water is almost always contaminated. If you live in the country, then ground water is lake, pond, creek, stream, or river water. In the city, it is water flowing beside the sidewalks during a heavy rain. If no other source of water is available, then you may be forced to collect the only water you can find. But don't drink it until you purify it.

Even if the water looks crystal clear in a glass, it can still contain tiny organisms that will make you sick. You don't need a severe case of diarrhea or a high fever during difficult times. Like the old saying goes, it is better to be safe than sorry.

WILDERNESS AREAS

All sorts of animals, bugs, and birds live in the woods. When they get the urge to use the bathroom, they let it go wherever they happen to be at the time (as long as it isn't inside their nests). Later, when it rains, that waste material washes down into the nearest pond, lake, stream, creek, or river. Think about that if you are tempted to drink ground water without purifying it first. The chances are pretty high you will get sick even though there is no industrial pollution anywhere in the vicinity.

You **MUST** purify ground water using one of the methods which will be described later.

MOVING WATER OR STATIONARY WATER

Water that is flowing swiftly over rocks is normally much cleaner than water in stagnant pools. If you have a choice, collect your water from a fast moving stream and then purify the water using one of the techniques described later.

WHEN TO COLLECT GROUND WATER

Immediately after a rain the water in most streams and creeks will be muddy for a short period of time. At the very beginning of a rain shower you should check your water containers and fill them up if necessary before your normal water source (creek) gets really muddy.

SPRING WATER (DOESN'T REFER TO THE TIME OF YEAR)

When it rains, the water does two things. Some of it travels along the top surface of the ground and ends up in creeks and streams. But a lot of it soaks into the earth and some of it makes its way down to the natural water table in the area. The earth is an excellent water filter. If the water table is 100 feet or more beneath the surface, then the water there is usually safe for human consumption without any treatment. That's why people in the country drill deep wells - they want clean water that doesn't need treatment.

The next question is, how does a person get to that deep water out in the middle of the woods?

Do NOT waste your time trying to dig for it. It isn't worth the effort. The best way is to find where a spring heads out. Let me explain. Because of gravity, water seeks the lowest possible level. You can usually find a stream or creek at the bottom of most hills or mountains. When you find one, begin walking upstream. Every now and then you will find a tiny feeder stream flowing into the main stream. The main stream will continue along the foot of the hill. Follow the tiny feeder stream up the side of the hill. Sooner or later you will eventually come to its source. It will just emerge from the

ground. This is called the "head of the spring." The underground water table in this area is very close to the surface of the earth at this one spot and this particular exit point just happened as a result of nature. The water at the head of the spring hasn't had a chance to become polluted with lots of animal waste so it is the purest water you will find in the woods.

The head of a spring is normally a reasonable distance up the side of a hill or mountain. If there is any level ground near the spring head, this is usually an excellent place to set up camp. You avoid both the peak and bottom of the hill (high winds and flooding waters), and you are near a really clean reliable source of good water.

Usually (not always) this spring water is so clean it doesn't need to be boiled. I only know of one way to determine if the spring water contains harmful micro-organisms (called pathogens). Take a small water sample to your local water authority (county water service) and have it tested. They will tell you if it is fit for human consumption without being treated.

There is one more important consideration. After a really good rain shower, there are usually many, many feeder springs running into the main stream at the bottom of the hill. The water table rises and it leaks out all the holes near the surface of the earth. After a short period of time, most of these holes run dry because the water table falls back to its normal level. Therefore, the best time to look for the head of a spring isn't after a good rain. At that time they are easy to find but most will be undependable for the long haul. Wait until you have had a few good sunny days and then look for a spring head that is still running strong.

WATER CAUGHT IN ROCK DEPRESSIONS

Most rain water will flow into a stream or soak into the earth. However, some of it will be caught in large natural depressions in boulders and other large rocks. Depending on the size of the depression (and other factors such as how long the water is in the shade each day, and how much of the rock is above ground to absorb the sun's rays, etc.) the rain water may not evaporate for many days after a rain. If you are trying to become familiar with a particular area of the woods, then you should mentally note these large depressions in a rock when you see them (even if they aren't filled with rain water at the time).

DRY SPRING BED WATER

After a long dry spell, many springs and streams will run dry. If you are really desperate for water, then try digging in the lowest part of a dry spring or stream bed. Sometimes you will hit the water table two or three feet below the surface.

WILDLIFE WATERING HOLES

All of God's creatures need water to live. If you follow a heavily worn animal path downhill in the woods, it will probably lead to water. If you hear frogs in the distance, they are probably real close to some water. If you hear geese or ducks in the distance, they are probably real close to some water. Follow the animals and you will have a pretty good chance of finding where they get their drinking water. (Note: Bees also need water and they will build their hive in close proximity to a water source. If you see a bee, observe where it goes when it leaves the flower. It will either be heading to another flower, or to its hive. When returning to its hive, bees always fly in a straight line, or the proverbial bee line. Remember, the bee's hive is near some water.)

CONDENSATION FROM GREEN LEAF VEGETATION

Put a large plastic bag around the leaves of a non-poisonous bush or shrub in the early morning and secure the open end of the bag to the wood branch with a string. During the heat of the day the green vegetation inside the plastic bag will release water vapor which will collect on the inside of your plastic bag and gradually drain down to the lowest edge of the plastic bag. When you check your bag at the end of the day you will discover about one-ounce of water (or less) in the lowest corner of the bag. Therefore, for this method to be of any practical value, you would need to have a lot of these bags attached to a lot of different plants every day.

SOLAR STILL

I have read about solar stills but I have never personally experimented with one. However, I am passing this information on to you so you will know everything I know about water.

You will need a large plastic sheet or tarp to make a solar still. Dig a conical hole about four-feet wide at the top and coming to a point about two-feet deep. The bottom of the hole should be in the very center (equal distance from all sides). The slope of the sides isn't critical. Put a medium size pot at the very bottom of the hole. Then lay your plastic sheet over the top of the hole and put a medium size rock (about one-pound) in the center of the sheet just above the pot which will be directly underneath the sheet. Put heavy rocks on top of your plastic sheet all around the outside of the hole to keep the sheet from touching the inner sloping sides of the hole. The center of the sheet should be about 18 inches below the surface of the ground but about 6 inches above the pot. Wait 24 hours. Water vapor will form on the underside of your tarp and drain down to its lowest point (beneath your one-pound rock) and then drip into your pot in the bottom of the hole. On hot days and cold nights you can collect about one-pint of water per 24-hour period. I read somewhere that you can put moist green non-poisonous vegetation (leaves) near the bottom of the hole (but not in the pot) and this will increase the water yield from your still.

Solar still water is naturally distilled and it **might** be safe to drink without any treatments (such as boiling or chlorine). However, to avoid the possibility of getting

sick it is a good idea to process the still water using one of the methods detailed below.

You will have to move your solar still every two or three days because you will have pulled all the available water from that hole until the next time it rains. If you want to buy a plastic sheet to take with you when you go camping, then you can find them in the house paint section of most stores, including WalMart and most hardware stores. They are used by painters as drop-cloths to keep paint off the floor. They come in a variety of sizes and thicknesses. For durability, the 2-mil thickness is probably best. I have never built a solar water still but I have used these plastic sheets before. The 3-mil stuff will last longer but it is heavier and therefore you will burn more calories carrying it around in your backpack. The 1-mil stuff is lighter but it is very easily damaged (torn).

Note: I occasionally receive an email telling me that I omitted the long thin plastic tube that most survival manuals normally show extending from inside the water pot up along the side of the hole and out from under the plastic tarp. The purpose of the long thin plastic tube is to allow you to drink the water from the pot without disturbing your solar still setup. I **intentionally** omitted that tube or "long straw" for safety considerations. If I were using the above solar still to generate my drinking water then I would want to visually examine that water before I put it into my mouth and swallowed it. Therefore I did not include the "long straw" in the above drawing or in my description of how to build a solar still.

WHAT MAKES WATER UNSAFE TO DRINK?

There are three different types of waterborne pathogens that make water unsafe to drink: protozoa, bacteria, and viruses.

- **Protozoa:** They live in insects, or in cysts when on the outside of an animal. Examples of common waterborne protozoa are amoeba, giardia, and crypto(sporidium). Protozoa range in size from 1 to 100 microns, with the average being around 16 microns. They are easily removed from water by boiling. Because of their large size most of them are also easily removed by commercially available water filters (with the exception of the very small crypto). Some are relatively resistant to both chlorine and iodine chemical treatment methods. It has been estimated that 90% of the surface water in the United States is contaminated with protozoa.
- **Bacteria:** A one-celled organism that can exist in the air and in water. The average size of bacteria is between 0.2 to 1.5 microns with some as large as 10 microns. They are easily removed by boiling, by chemical treatments, or by most good water filters. Fortunately, not all bacteria are life threatening. However, the most common life-threatening waterborne bacteria are dysentery (diarrhea), typhoid, (vibrio)cholera, campylobacter, E. coli, and salmonella.
- **Viruses:** The most common waterborne viruses are hepatitis, yellow fever, polio(myelitis), rotavirus, and norwalk. Viruses are much smaller than bacteria. The average size of a virus is from 0.004 to 0.100 microns. They are easily removed by boiling or by chemical treatments. However, because of their extremely small size, they can pass through most water filters. However, some viruses will cling to other larger particles in the water which can be filtered out.

The incubation period prior to becoming extremely sick as a result of ingesting one of the above pathogens varies from a few hours to a few weeks, depending on the pathogen itself and the concentration ingested. Common symptoms include fatigue, fever, cramps, diarrhea, dehydration, and nausea. If not properly treated by a medical professional, these pathogens can eventually result in a person's death.

If you are in a remote area or if you can't get to a doctor quickly, then stay warm, drink plenty of safe fluids, and rest. You can help control the diarrhea with over-the-counter antidiarrheal medicines, and you can take over-the-counter pain relievers to help reduce the fever and minimize other associated discomforts. However, you should plan to get to a medical doctor as soon as possible.

HOW TO MAKE WATER SAFE TO DRINK

Pure clean water should be used:

1. to drink,
2. to make a beverage,
3. to cook with,
4. to brush your teeth,
5. to wash your hands and face, and
6. to wash your eating dishes and cook pots.

After you have purified your water using one of the following techniques, do NOT recontaminate your water by allowing it to touch a pot, or spoon, or anything else that has been in contact with the unpurified water.

If your source of water is relatively cloudy or muddy (high turbidity) then allow it to stand in a large pot for twelve-hours to give the foreign particles an opportunity to settle to the bottom of the pot. Then slowly and carefully scoop the water out of the top of the pot without disturbing the sediment on the bottom of the pot.

Regardless of which of the following methods you use to purify your water, the first step is always the same. Begin by pouring your water through a standard paper coffee filter, or through a clean pillow case, or through a piece of denim cloth material. This will trap and remove any large impurities in the water. The same coffee filter can be used over and over again for several days (unless the water is muddy or dirty).

After you have pre-filtered your water, then you may use one of the following options to purify your water. The following alternatives are presented in order from the cheapest to the most expensive method.

BOILING

- Kills Protozoa, Bacteria, and Viruses.
- Does Not Neutralize Harmful Chemicals or Radioactive Particles.

Boiling is the BEST method for killing ALL the pathogens in the water. Even the most expensive commercially available water filter can't make that claim. Therefore, let's examine this method very carefully.

Water boils at approximately 212°F at sea level at a barometric pressure of approximately 30.3 inches of mercury. The boiling point of water decreases as the barometric pressure decreases. Therefore, the changing barometric pressure in your area has as much impact on the boiling point of water as the altitude at which you live. The following table illustrates this relationship:

The Boiling Point of Water at Different Altitudes at Different
Barometric Pressures

Altitude	30" Mercury	29" Mercury	28" Mercury	27" Mercury
Sea Level	211.5 °F	209.8 °F	208.0 °F	206.2 °F
2,000 Feet	208.0 °F	206.2 °F	204.4 °F	202.5 °F
4,000 Feet	204.4 °F	202.5 °F	200.5 °F	198.4 °F
6,000 Feet	200.5 °F	198.4 °F	196.3 °F	194.1 °F
8,000 Feet	196.3 °F	194.1 °F	191.8 °F	189.4 °F
10,000 Feet	191.8 °F	189.4 °F	186.9 °F	184.3 °F

All pathogens die rapidly at 185°F. Some pathogens die at lower temperatures. By the time the water has reached its boiling point (even at low barometric pressures), all the pathogens in the water are already neutralized.

Therefore, bring your water to a boil and let it hard boil for 1 minute. Or hard boil for 2 minutes on top of an extremely high mountain at very low barometric pressures. Boiling for more time doesn't help, and it results in more water being lost as steam, and it makes the water taste flatter. All pathogens are already dead by the time the water reaches its boiling point. There is no benefit to a pathogen being "more" dead. Wait patiently for the water to gradually cool to a comfortable drinking temperature.

How to Improve the Taste of Boiled Water:

1. Stir the water to add oxygen back into the water.
2. Or pour the water from one clean sterile container into another sterile container several times.
3. Or add a little salt to the water.
4. Or add 50 mg of Vitamin C to a quart of water.
5. Or add Kool-Aid (10% Vitamin C) or Tang (100% Vitamin C) to the water.

Now let's look at some other ways to improve the quality of your drinking water. But don't forget, **Boiling is Best**, if you intend to actually drink the water in the next 24 hours or so. However, if you plan to store the water for an extended period of time, then one of the following methods should be considered.

LIQUID CHLORINE BLEACH (SODIUM HYPOCHLORITE) - EITHER 5.25% OR 6% STRENGTH

- Kills Bacteria and Viruses.
- Not effective against all Protozoa.
- Does Not Neutralize Harmful Chemicals or Radioactive Particles.

Relatively Clear Water - Use 2 drops of bleach per quart of water or 8 drops per gallon (or 1 teaspoon per 10 gallons). Cloudy Water - Use 4 drops of bleach per quart of water or 16 drops per gallon (or 2 teaspoons per 10 gallons). The water should not be

too cool. The water temperature should be 70°F or higher. If necessary, put the water in direct sunlight to raise the water temperature. The effectiveness of chlorine at killing pathogens diminishes rapidly at lower temperatures.

Add the required number of drops of chlorine liquid bleach (Clorox or store brand, unscented) to the water and wait one hour for the bleach to kill all the tiny organisms. If you can detect a faint chlorine smell in the water at the end of one hour, then it is safe to drink. If you can't smell the chlorine, then add the same amount of bleach a second time and wait another hour. If you can detect a faint chlorine smell, then the water is safe to drink. If you still can't detect the smell of chlorine, then discard the water because it contains too many germs. (Note: Always start with the minimum recommended amount of bleach and add a little more if necessary. Too much chlorine is harmful to your body.)

DRY 68% CALCIUM HYPOCHLORITE GRANULES

- This is the **shock** treatment chemical used in swimming pools.
- Kills Bacteria and Viruses.
- Not effective against all Protozoa.
- Does Not Neutralize Harmful Chemicals or Radioactive Particles.

The water should not be too cool. The water temperature should be 70°F or higher. If necessary, put the water in direct sunlight to raise the water temperature. The effectiveness of chlorine at killing pathogens diminishes rapidly at lower temperatures.

Put 1/96 of an ounce (a pinch between thumb and finger) of 68% Calcium Hypochlorite granules into one gallon of water. Wait one-hour. If you can detect a faint chlorine smell in the water, then it is safe to drink. If you can't smell the chlorine, then add another "pinch" and wait another hour. If you can detect a faint chlorine smell, then the water is safe to drink. If you still can't detect the smell of chlorine, then discard the water because it contains too many germs. (Note: Always start with a small amount of Calcium Hypochlorite and add a little more if necessary. Too much chlorine is harmful to your body.)

The shelf life of liquid bleach (sodium hypochlorite) is much shorter than the dry 68% Calcium Hypochlorite granules. Therefore, if you wish to store hypochlorite for emergency purposes, the best choice is the dry granules.

Liquid Bleach: If you have dry 68% Calcium Hypochlorite granules, and for some reason you need liquid bleach, then you may dissolve one-ounce of 68% granules in one-pint of water and you will have a 5.25% liquid bleach solution.

LIQUID 2% TINCTURE OF IODINE

- Kills Bacteria and Viruses. Not effective against all Protozoa
- Does Not Neutralize Harmful Chemicals or Radioactive Particles.

- Relatively Clear Water - Use 4 drops of iodine per quart of water or 16 drops per gallon.
- Cloudy Water - Use 8 drops of iodine per quart of water or 32 drops per gallon.

The water should not be too cool. The water temperature should be 70°F or higher. If necessary, put the water in direct sunlight to raise the water temperature. The effectiveness of iodine at killing pathogens diminishes rapidly at lower temperatures.

Add the required number of drops of iodine to the water and wait one hour.

Iodine has a printed expiration date on the bottle. When that date has expired, the iodine will have lost some or most of its original strength. Therefore, iodine is generally not the chemical of choice for long-term survival situations. **Caution:** Iodine water treatment methods can NOT be used by pregnant women, or nursing mothers, or individuals with thyroid conditions. In addition, long-term exposure to iodine can contribute to liver damage. Although iodine is one way to purify water, it is NOT a preferred method. Any of the above methods is superior to the use of iodine.

COMMERCIAL WATER PURIFICATION TABLETS

Most commercially available water purification tablets are based on the use of either chlorine or iodine as their primary active ingredient. Both chlorine and iodine have a relatively short shelf life before they begin to lose their full strength and effectiveness. If you happen to have some of these tablets and they have passed their expiration date, then you should replace them.

COMMERCIAL PORTABLE WATER FILTERS

- Removes Protozoa, Bacteria, Most Viruses, Many Harmful Chemicals and Radioactive Particles.
- To remove ALL Viruses, you must Boil the Water or Add Chlorine or Iodine.

The best overall method for improving the quality of water, but also the most expensive, is to use a commercial water filter, but not one that permanently connects to your home water system because it requires water pressure to function properly.

The one **potential** disadvantage of commercial water filters (not purifiers) is that they cannot remove 100% of ALL virus pathogens. Fortunately, waterborne virus pathogens are NOT a common problem in most areas. Therefore, unless there has been an outbreak of viral diseases in your area, then waterborne viruses will probably not be a problem with your water supply. However, if there has been a recent outbreak of viral diseases, then add the appropriate quantity of chlorine to the water, wait one-hour, and then put that treated water through one of the following filters.

Two Quick Definitions

- **Portable:** Easy to move from place to place.

- **Potable:** Okay to drink.

Commercial water filters are normally purchased for one of three reasons

1. To improve the taste and quality of the normal home water supply.
2. To provide drinking water during a short-term emergency.
3. To provide drinking water for long-term survival.

Many people add a variety of water softeners, water filters, and water purifiers to the plumbing in their homes to improve the quality of the water normally available at their place of residence. These filters depend on water pressure and/or electricity to function properly. Neither water pressure nor electricity can be depended on during either short-term or long-term survival scenarios so these types of water filters will not be discussed here.

Short-term emergencies, such as hurricanes or tornados, are extremely serious but life gradually returns to normal after the danger has passed. Unless your area was completely demolished, most services are restored in days, or weeks, or sometimes a little longer.

Long-term survival, such as a World War being fought within your nation's borders, is a more challenging situation because you may not have any outside help or assistance for an extended period of time. Your survival will depend completely on the resources you had available before the situation developed.

Some water filters perform very well during short-term emergencies, but they are not designed for long-term survival situations. Other water filters are specifically engineered for long-term survival scenarios. Fortunately, those same filters will also function exceedingly well during short-term emergencies. Consequently, the following recommendations are for long-term survival water filters, which will also serve in a short-term emergency if required.

In a long-term survival situation, the primary source of life-threatening pathogens entering the water supply is through human waste (fecal matter). Since the normal sewage system is not functioning the way it was designed to, human waste is NOT disposed of properly. It is frequently thrown into the streets to get it out of people's homes. The next rain washes significant amounts of that human waste into the nearest water collection area. Disease, sickness, and death soon follow. Even if you are in or near a crowded camping area during a long-term survival scenario, the same tragic drama unfolds. To survive in a situation such as this, you need to filter all your drinking water and then boil it. (Note: The proper way to deal with human waste while camping is to bury it.)

SHELTER

[How To Build A
Lean To Shelter](#)

[How To Build A
Survival Shelter In
A Wooded Area](#)

[Survival Shelters](#)



How To Build A Lean To Shelter

There are many kinds of survival shelters, but this is the easiest, most efficient shelter for most wooded areas; especially coniferous. Please note that many environments may not provide the resources you need to build this shelter, and that while this practical, easy shelter is applicable to many areas in the United States, (and almost anywhere else with trees) no one shelter is the end all, be all shelter.* At any rate, we will be building the lean-to shelter because of it's adaptability, and ability to be built quickly in an emergency; without compromising effectiveness.

- Please see "How to Build an Emergency Snow Camp" if a lot of snow is available in your area.

STEPS

1. **Find a decently flat area with a tree that splits it's trunk fairly low; forming a "V" shape no further than 6' or 8' feet off the ground.** Note that you will probably make some compromises here due to time constraints. Or, if you are in a coniferous area with trees that don't typically split their trunks, you will have to stick a sturdy "Y" shaped limb/branch into the ground to simulate a tree with a split trunk.
2. **Find a long tree limb; the straighter, the better.** It should be a few feet longer than you, and from 3" to 6" thick. Rough bark is a plus, as it will help to avoid slipping. This is going to be the spine of your shelter, which the rest of the frame (which you can think of as the ribs) will lean against.
3. **Place one end of the limb you found in the previous step in "V" of your chosen tree.** The other end should rest sturdily on the ground, or if possible, be stuck/buried in the ground a few inches.
4. **Find some thinner (2" or 3") sticks and limbs/branches for "the ribs" that can be leaned on the large pole (the spine) at about 45-50 degrees, and (of course) touch the ground.** start leaning them against the "spine" to create the basic frame of your shelter. Once again, it helps if you can push a few of the larger sticks into the ground to add to the stability of the frame.
5. **Find smaller sticks that are less than or equal to about an inch in diameter.** Lean these up against the "spine" to fill in the space between the thicker "ribs".
6. **You should now have a decent skeleton of a shelter; but it isn't suitable for sleeping in just yet.** You need some insulation, or "skin" to keep your body heat in, and the wind/weather out. Gather green pine boughs if they are available. (Don't kill off the trees by taking all of their branches though.) Find other things such as thin twigs, leaves, brush, or even mud. Use these types of materials in whatever combination is available to you.
7. **Add all of this to the frame of the shelter in order of decreasing size until you can't find any holes you can fit fist though.** You can add to this layer as much as resources and time will allow. This will increase heat retention and weather resistance.

8. **Gather extra dead leaves, pine boughs or whatever other soft/yielding materials you may have left over, and spread them over the floor of your shelter if you do not have a ground pad with you.** (You always should if you are just practicing.) This will help stop the cold ground from sucking all of your precious body heat away.
9. **Test your complete lean-to shelter's stability by gingerly applying gradual weight/pressure to various places of the spine.** Do this very carefully! You want to check the structure's safety, by finding a spot where it feels like it might start to give way; but you don't want to actually put enough pressure that it does.
10. **If you found any weak-spots, you may want to reinforce those with a couple well-placed "ribs" that are in a "Y" shape, basically forming support columns.** (Probably from the inside.) If you cannot find any nice, "Y"-shaped sticks, you will probably have to re-distribute the weight of the "skin" to alleviate the uneven weight on the frame.
11. **Admire a job well done!** At this point, you will probably want to build a fire if you didn't have time already. Be sure to make a fire ring by placing rocks in a circle, and removing as much snow as you can (assuming there is snow on the ground.) from the center of the circle.
12. **When you have your shelter and a hot, controlled fire, you may try to stand a large, flat stone (or similar object) up on the side of the fire ring to reflect heat to your shelter.**
13. **Cover your gear with a pack cover or trash bag, (if you have gear in a pack) and check-in to the "I'm warm and definitely not dead" motel!** (Your lean-to that is...)

TIPS

- Fall and early spring are good times to start practice because the temperature is usually comfortable. When you get good, make sure you get some practice done in winter, as it's a whole new game. Not only does cold make everything harder, but snow will change the way you build your shelter as well.
- Be sure to build on the flattest ground you can find, avoiding the tops of hills, bottoms of valleys, and any other low points/flood zones where colder air will settle.
- While you should spend some time looking for a good spot, you should keep in mind that you should keep your movement to a minimum to increase chances of being found soon. You should also remember that the shelter will always take longer to make than you originally anticipate; and you can not risk being caught in the dark, as your shelter will take at least double the time to finish without the light of day.
- If your shelter is on the side of a hill, (an often necessary compromise) try to build it vertically on the upper side of the tree and sleep with your feet downhill to minimize chances of rolling during the night.
- It should be small enough for you to lean on your side while you are lying down. As you probably know, a shelter with an excessive interior size will not keep you very warm.
- Practice, practice, practice! Nothing can replace personal experience!

- If you go camping often, or better yet, live on wooded property; spend a few camping trips or Friday nights in a shelter you built. Start early in the day, and spend all the time you need on your first few shelters; don't let this stress you out, at this point, it's a game! Most of your learning will be by mistakes, so make sure you take notes on the shelters you make for practice. Take a picture before and after the night you spend in it, and come up with a list of do's and don'ts to help you learn the most you can from each shelter you build. After you have spent a few nights in different shelters you have built, and subsequently documented their effectiveness, you will eventually learn what works and what doesn't.
- After you can make a good shelter without referring to your "little book of shelters", (or whatever you want to call it. Mine is named Archimedes.) you are ready for the next phase of practice. Try building a few shelters as quickly as you can, with a firm time limit. If you don't finish the shelter by the allotted time, you may either finish it off if you were close, or simply take it down and try again. Make sure that you start the time when you start looking for a site, and end it when you have yourself inside the shelter after it has passed your structural integrity tests.
- When you are building practice shelters, you may build in the same spot each time while you are starting out. For now you are just practicing building technique. Later, in the "second phase", you should find a new spot every time, as your focus has shifted from learning how to build a good shelter, to practicing how to apply your skill to a real-world scenario in which you will probably not know the lay of the land. (Especially as it gets dark.)
- Build your shelter near a strong, stable face of rock if you can. This can reduce wind as well as reflect the warmth of a fire if you build the fire between your shelter and the rock. HOWEVER, you must be careful not to build your fire directly against the rock in winter, as the heat will expand the frozen stone and can cause it to break. Additionally, water oftentimes freezes in the stone, producing large cracks which can make it unstable, melting the ice in these cracks quickly, combined with the expansion of the stone can mean a few tons of rock on your face in the middle of the night. (Not my favorite thing to wake up to.)

WARNINGS

- DO NOT BE IGNORANT OF YOUR SURROUNDINGS! In the summer, you may have to be very careful of snakes, and other dangerous animals that tend to spend time in places you may build a shelter or look for materials. In some areas there may be large animals such as moose, wild hogs, and other such creatures you must take special care to avoid. You must know and account for the specific dangers of the area you are in! Additionally, you must make sure it is legal to do whatever you plan to do, where you plan to do it. You probably will not be allowed to make a ground fire except in designated fire rings; for example.
- Always ask permission and keep the wishes of the land owner in mind if you are on private land.

- Have a specific plan and a backup when you are practicing! Let other people know when you are going where, and what time they should expect you back. This is extremely important if you will be somewhere that has iffy cell coverage. Pitching a tent near your shelter, or better yet, building your shelter less than 100-150 yards away from your car if you are not on your own land are both idiot-proof backup plans.
- DON'T GO IT ALONE! Whenever possible, you must have at least one other person with you. If you can't get another person to come with you, you shouldn't even go unless you are practicing in your backyard. It is also a very good idea to make sure at least one of you has a cell phone with ample battery power and reception. Make sure you know where to tell emergency services where to go in the event of an emergency. The more specific the better. I.e: The youth primitive camping area, site number 9, due west of the entrance road, at Jacomo Lake park.
- Your shelter can collapse during the night if you don't build it carefully and test it for sturdiness. In some cases, even snow build-up can cause a potentially dangerous (at the very least unpleasant) collapse.

THINGS YOU'LL NEED

- Large, long, semi-straight branch about 6" thick
- Smaller branches, sticks, moss, leaves, pine boughs, mud, or whatever you can find in the immediate area that will help seal the cracks in your shelter
- Tree with V at appropriate height
- Discipline and perseverance (It can take quite a while on your first shelters.)
- Safe, legal area with appropriate environment to practice

<http://www.wikihow.com/Build-a-Survival-Shelter>

HOW TO BUILD A SURVIVAL SHELTER IN A WOODED AREA

When you are lost in the woods, the sky is starting to look cloudy, and its getting cold, it might be a good idea to build something you can stay warm in for a night. You need a shelter so here are a few tips.

STEPS

1. **Know that there is nearly always a way to build a shelter in the wilderness, and that it is not very hard to do.**
2. **If it is night, don't move from where you are.** It is very easy to lose yourself in the dark, and being separated from the area you do know can be even more frightening.
3. **Find an area clear of large rocks and roots.** Building your shelter in a ditch is a good way to stay out of the wind, but rain might make you wish you had dealt with a light breeze. It is also dangerous if you are in region prone to flash-flooding, so keep out of ditches.
4. **Find a tree, boulder, rock face, or other large object to be the base for your shelter.** It should be tall enough for you to crouch behind, and wide enough to accommodate your resting body.
5. **Begin gathering wood.** It is your most important survival tool. You will use it for your fire, your shelter and hopefully for making some traps for animals. Get anything you can find.
6. **Starting with the larger pieces of wood you have collected, lean them against your object.** As you are left with smaller and smaller sticks, start slanting them across the larger ones to avoid gaps. (Bear in mind that some gaps are okay.) Use enough sticks to make sure there are no holes; otherwise it will be hard to cover these with leaves. Do not forget to leave an entrance/exit hole.
7. **Make your shelter wind and waterproof.** There are two ways of doing this. If you are in the snow, pile snow up around it. Of course, if it hasn't begun to snow yet, you can't do that. Instead, cover your shelter with leaves. First dry leaves, then wet muddy leaves if you can get them. This will keep your shelter insulated, and stop it from falling apart. Lay sticks on top of the leaves so that they don't blow away with the first breeze.
8. **Be creative.** Almost anything you can find has a potential use in building a shelter. A net may be useful for making a hammock (useful in warm weather) and rope has hundreds of uses.

TIPS

- If you are in a jungle, keeping your self up from the ground is a MUST, since the insects below will have nasty bites and you may catch deadly diseases. Have a

mosquito net and if you are not able to, find a plant that may act as a substitute repellent. Rub mud all over exposed skin to avoid sun burns.

- A lean-to is an average and easy way to make shelter, put a cross beam in between two trees approx. 6-8 feet apart. Lay some sticks on a downward angle and dig them slightly into the ground to avoid movement and sliding from the base of the sticks. Take spruce bows and poke them downward into the sticks starting from the top. Walls optional and always build a fire in the front of your camp with charcoal.
- If you find a fallen tree with the roots in the air, it will protect you from wind and rain. But, if you make a fire, make sure that none of the roots catch fire.
- If you have time before dark, [start a fire](#).
- If it doesn't look like rain, you may not need to build a waterproof shelter the first night.

WARNINGS

- Don't wander too far from your shelter and wait for rescuers to reach you. Save your energy by keeping in one place.
- Be cautious of splinters. They are a nuisance, and somewhat painful - definitely not something you want slowing you down.
- Don't build your fire too close to your stick shelter in case the sparks ignite it.
- Always stay away from the fire. The minimum distance is 6 feet.



SURVIVAL SHELTERS

The weather had changed quickly. The once clear sky was now filled with dark moving clouds and large flakes of snow had started falling over an hour ago. When I had started my hunt earlier that day the weather had been perfect. I shuddered as I realized I would not have time to find the truck before darkness fell. It looked like I would have to spend the night in the bush. Nonetheless, spending the night was much safer than meandering around in the dark woods with snow falling. As tired as I was, I knew what had to be done.

My first step was to get organized *before* it became dark. While it is possible to establish an emergency campsite in the dark, it is much more difficult. Plus, with bad weather approaching it was important that I find all the dry firewood I could, and quickly.

Looking around, I was able to find a spot in a group of oak trees that was pretty much out of the wind. I made sure there was no dead tree limbs overhead that could fall on me during the night.

I quickly gathered up kindling for the fire, as well as a full night's worth of firewood. I knew the night would be cold, so I added a little more to the pile than I would usually have. I scraped the snow off the ground, dug a small fire pit, and started a fire. I filled my metal canteen cup with water and put it to boil near the fire as I started on other chores.

Snow was falling faster now as I opened my backpack and took out a poncho and a roll of nylon cord, approximately twenty feet. I tied the cord between two tree trunks and then draped the front of the poncho over the cord. Using the grommets on the poncho, I secured the poncho to the line. I then used sharpened stakes to pin the other end of the poncho to the ground. I now had a shelter from the snow and what little wind that was blowing.

While survival was no longer an issue, I wanted a little comfort to go along with my evening in Mother Nature's hotel. In just a few minutes I had removed some green cedar boughs from nearby trees and had placed them inside my shelter. To keep the boughs from irritating my skin, and making sleep more difficult, I covered them with my space blanket. The boughs would form a rough mattress for my night's sleep and insulate me from the cold ground.

Since I *always* carry a survival kit, containing foods and emergency supplies, I was prepared for the evening. I soon had a cup of coffee and a banquet of dehydrated stew (dehydrated meals are light and inexpensive to carry). I finished my meal with a piece of hard candy, which I knew was not only a treat, but also a way to increase my body heat. I felt much better with the fire burning, a hot meal inside of me, and a shelter behind me. I was content.

As soon as the meal was done, I picked up my cell phone and called my wife. I informed her that I would not be home that night, explained why, and told her exactly where I was, or as near as I figured I was. I further informed her I was safe, had a shelter, and would call her in the morning as soon as I reached the truck. I did this to avoid a search and rescue mission being called to look for me and to give her peace of mind.

There are many different types of cold weather shelters that a person can construct and some take only minutes to prepare. I suggest, even if the amount of snowfall is sufficient, that most people avoid building an igloo. I have found them difficult for most of us to construct. I have found other types of cold weather emergency shelters that work just as well and take less effort to construct.



The first shelter, a “tree pit” shelter is by far the fastest and easiest to construct (I always suggest this shelter in any article I write about winter or arctic survival). As heavy snow falls, it covers the branches of large trees. Under the tree's lowest branches, however, there is usually a “pit” where no snow, or very little, has reached. Usually, all a survivor has to do is clear away what little snow may be there, and perhaps remove a few lower branches and the shelter is almost completed. I suggest building the shelter up by positioning poles around the trunk of your chosen tree (like the frame of a tee-pee) and then covering it with pine boughs. Or, if you have the material, cover these poles with a tarp or poncho, then layer with boughs, and add snow when you are done (I always carry a casualty blanket in my survival kit that works well for this). This will aid in insulating the shelter and help block the wind.

While constructing this shelter, avoid knocking the snow off of the lower branches that you have left intact. The snow on the tree branches will further insulate the shelter. Remember to cover the floor of the shelter with about fourteen inches of pine boughs to insulate it as well. Nothing ruins a good night's sleep like a cold sleeping platform. The drawback with this type of shelter is the lack of a fire pit. A campfire is not recommended due to the hazards associated with the tree limbs. Make sure you make a ventilation hole in the shelter to allow carbon monoxide to escape if you are using a candle or other portable heating device. All shelters should be well ventilated at all times.

Another type of shelter to consider is a simple A frame. This shelter is quickly constructed and is easily made. Once again, if you have a poncho or a tarp, the shelter is done in no time. Another survival item that I usually carry that helps greatly is about twenty-five feet of cord. The type of cord used is up to you, but I prefer nylon parachute cord (550 cord) because it is lightweight and strong enough for most tasks. The cord can simply be ran between two trees about two feet off of the ground and secured to the two trees. Then the material can be draped over the line and secured to the ground. Make sure all stubs and sharp points are removed from any limbs you are using to avoid puncturing the material and to avoid head injuries once in the shelter.

If you do not have material to work with, position a long limb between two trees and secure it at each end. Your next step is to construct a rough frame once you have the top pole in position. I suggest you use two poles, crossed at the point where the top is at both the front and rear of your shelter. Then, secure two horizontal poles on each side to make the structure stronger. To make the walls of your shelter, position pine boughs or limbs, standing up along the sides of the frame. Remember to follow the angles of the shelter so the shelter resembles the letter A when viewed from the front. Once the frame is completed, the walls added, you should now cover the shelter with snow.

Keep in mind that snow, though it seems very cold, makes a great insulator for shelters.

A fire pit can be made near the shelter and I recommend you use heat reflectors (boulders or a stack of logs, one on top of the other) to reflect heat back to your shelter. Make this fire pit no closer than 10 feet to your shelter. It is also important to line the floor of your shelter with pine boughs to protect you from the chill of sleeping on a cold ground. Place your gear and enough fire starting materials in the shelter immediately after construction. This provides you with enough wood to get a morning fire going as well as prevents gear being lost. Falling snow will quickly cover any object left unattended in a very short time.

One shelter I use most of the time is a simple lean-to. This type of shelter is great when you need a shelter quickly, or if there is not enough snow for making a true arctic shelter. I simply tie a cord between two trees, just as I explained in A frame shelter above. I then drape about a foot of a tarp or poncho over the line, tie a cord to the grommets on the ends of the material and run the cord down to two stakes I have stuck securely into the ground. My next step is to use stakes at the other end of the material to secure it to the ground. Once again, I cover the roof with pine boughs. If snow is available, I add snow to the pine boughs also.

Remember, snow is a great insulator!

And, like in all cold weather shelters, be sure to line the shelter with pine boughs to insulate you from the cold ground. Once the floor is lined, you should make a fire pit in front of the shelter. I never build a fire any closer than 10 feet (pine boughs burn very quickly). If you place a heat reflector on the side opposite of the shelter entrance you will be surprised how warm the shelter will be. The advantage to this type of shelter is the speed and ease of which it can be constructed. In a real emergency, speed may make the difference between life and death.

If you have the time to make one, a snow trench shelter is one of the best. I have spent days in one of them and I know from experience they work very well. Your first step is to dig down into the snow and clear a trench about three feet wide, three feet deep and seven feet long. This is just a little longer and wider than most people are, to allow you to store your field gear in the shelter. But, make sure you make it roomy enough. Keep in mind that you are looking for emergency protection from the environment, not a suite. The actual size used in construction is an individual

preference, depending on your body size and amount of gear you have, but I want a small and compact shelter with only my immediate needs in mind.

As soon as you have the trench made, line the floor of the shelter with pine boughs from the nearby pine trees. Other sources of insulation can be used if pine is not available where you are (If you survive an aircraft crash, the insulation from the walls or the material from the seats on an aircraft provide excellent protection from a cold sleeping surface). I suggest you place the boughs a little over a foot thick. I would prefer to pile them higher, but you have to be able to crawl into the thing once you have a roof on it. I have discovered, in my opinion, that you can never have too much floor insulation in a survival shelter.

Next, put your gear in the shelter up against the far wall, away from the entrance. Now you can start gathering up logs and limbs to cover the snow trench. Make sure you avoid rotted wood (the weight of the insulating material and snow may make it collapse) for the roof. Starting at the end opposite the entrance, I lay the logs and limbs over the open trench until it is all covered with the exception of a small opening. This opening would be the shelters entrance. You will have to estimate the size of your entrance based on your body size, but keep it as small as possible.

Also, make sure the logs overlapped the sides of the snow trench by about a foot on each side. This will give the roof strength and additional support. After the logs are in place, cover the top of the shelter with pine boughs. These pine boughs will provide insulation for your shelter. This insulation will prevent body heat from escaping and help keep the shelter protected from the wind and elements.

Once the boughs were placed on top, covered them with any material you may have. If you don't have anything, you can still make the shelter. Just make sure you secure each corner of the material to keep it from moving as you pile snow on it. I recommend you anchored the edges the material with wooden stakes. Once the material has been secured, begin covering it with snow. As you work on any shelter, avoid over heating. If you get too hot remove a layer of clothing. It is important to avoid sweating because of the danger of the sweat freezing. Also, if you feel yourself becoming too warm, stop for a few minutes and cool down. It is not a bad idea to stop at times and maybe have a hot drink. Just make sure you drink lots of water in cold weather conditions to avoid dehydration. I know it sound insane, but dehydration is a serious cold weather problem. I usually drink hot water frequently, because it assists in keeping my body warm and prevents dehydration.

Once the shelter has been constructed crawl inside and poked a hole approximately three inches in diameter in the top. This hole is to allow for ventilation. If you plan to burn a candle in the shelter (plus you will need some fresh air) you will have to constantly checking to make sure the hole stays open. Without the ventilation, and with the candle burning, carbon monoxide poisoning was a real threat. Always keep your shelter well ventilated.

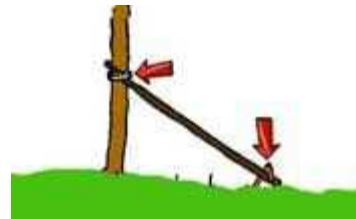
Your last step is to make a door for your shelter. You can use a poncho, tarp, space blanket, etc., and spread it out on the snow near the entrance to your shelter. Then,

pile snow on the material until you have enough snow to block the hole used for your entrance. Pull the ends and sides of the material together and tie them in place using some cord or material. You now had a door, roughly the shape of a ball. You can use the ends of the material as a crude door handle to pull the “door” closed once you are inside.

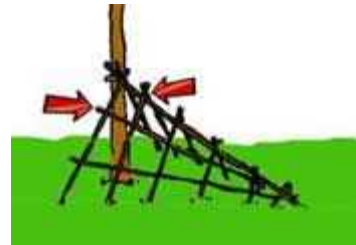
Survival shelters are easy to make. You can make the lean-to, “A” frame, and tree pit even when there is no snow around. Just complete all of the steps except the part about adding snow. In the desert you can add a dead air space (a good insulator in hot weather) to your shelter by placing another material over the first material you used during the construction of your shelter. Keep the material separated by placed brush between the materials.

The best shelters for general use are the lean-to or the “A” frame designs. They are easy to make and construction takes just a little time. Always consider what you need insulation from, the heat or the cold. In most cases we just need a shelter for comfort (rain or wind) or for psychological reasons. I do, nonetheless, always suggest a shelter for any survival situation. A good shelter will keep you rested, healthy, and if nothing else, happy.

- **Step 1**, tie a trimmed limb to a tree trunk, then secure the other end at ground level.



- **Step 2**, built a frame as shown above and you can use cord, vines, or cloth to hold the limbs on the frame.



- **Step 3**, The last step is to use limbs from trees to cover the frame. Notice the limbs are pointed down, as shown by the arrows. This is not the best shelter in the world, but it does work.



- **Step 4**, Once completed, go inside the shelter and trim any branches or twigs sticking through the frame that present a hazard to you or our gear. Remember, some of the branches need to be left on, to hang on the frame, so don't cut them too short or the limbs may fall off of the frame.
- **Note:** If you have snow, you can cover the branches with snow and further insulate the shelter. DO NOT use ice to cover the shelter and it's a poor insulator

and make the shelter colder. Snow has space between the flakes that assist in insulation.

To make an emergency shelter from scratch, use all natural materials and save your man-made items. I usually use rope or parachute 550 cord to secure the limbs for the frame, but vines could be used. I have found this shelter to be more stable if at least one end (two is better) is a tree. Wrap and secure the top cross-beams (1) and there are **two** of them. Next do the rest of the frame (2) to hold the frame up. Then use bark or logs to make the covering itself (3) and if you use bark, reverse the curves to allow water to drain. It can then be covered with pine boughs or tree limbs. If you have snow, cover the shelter to insulate it against the wind and cold.



Construct your shelter out of wind as much as possible and insulate the ground with pine or cedar boughs if they are in the area. If not, you may have to use leaves. But, be sure to "stir" the leaves well with a stick to make sure no snakes are in bed with you. You can improve on this shelter by adding limbs or brush on the top and sides to reduce the wind blowing through it. To me, this shelter is much more work than using just a limb shelter or using a small piece of tarp, which I usually have with me on outdoor trips. However, if you've a sharp knife with lots of time on your hands, this shelter works.

- **Simple Frame**, this shelter is easy to make and you can use branches from trees, or a poncho or tarp. If you have no man-made material, branches from pines or cedars, as well as other trees, can be used. If you use branches, the shelter may leak a bit if it rains. In snow covered areas, cover the branches with snow to shelter you from the winds. If you don't have rope or cord, you can use vines or strip the inner bark from trees to use for binding.
- **A Frame**, this shelter is more difficult to make and must have all the support braces secured to the frame (or it will wobble in the wind). Remember, use vines or strips of inner bark from trees to secure the frame if you do not have rope, twine, or string. I carry about 20 feet of para-cord, which works fine. Be sure to place your shelter in an area protected from the wind and be sure it's not under an old tree or a tree that has limbs reaching over your shelter.
- **A Lean-to**, this is very easy to make and is **the suggested design** for your shelter. You can cover the frame with a tarp, poncho, casualty blanket or branches. Notice how the branches are thickest part of the branch up and the tip of the branch is down. You may have to cut a "lip" from part of the branch to



allow it to hang on the frame. This lip is simply part of the branch that branches outward. Cut it to hang.



HUNTING

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The cardinal rule of firearm safety is that every gun must be treated as if it were loaded.

PREVENTING HUNTING INCIDENTS

MOST INCIDENTS ARE PREVENTABLE

Hunting is a safe outdoor activity. Each year hundreds of thousands of people hunt safely in Washington State. Unfortunately, each year there are also 10-15 shooting incidents which injure or sometimes kill fellow hunters. The Washington Department of Fish and Wildlife reviews all hunting incidents in Washington State. Since 1957, we have learned one very important lesson: Almost all hunting incidents can be prevented!

- Treat every firearm as if it were loaded. Always point guns in a safe direction.
- Most firearm deaths happen at home! Be just as safe at home as you are in the field. Practice safety whenever you are around firearms!
- Never handle any firearm if you are unfamiliar with it!
- Always unload and open the action before handing a firearm to anyone!
- Accept a firearm from another person only if the action is open!

YOUNG HUNTERS HAVE MORE FIREARM INCIDENTS

The Hunting Incident Summary chart below shows that hunters between 10 and 29 years of age have more firearm incidents than all other hunters. That's why Washington State requires hunter education training for beginning hunters. This course will teach you how to handle firearms and archery equipment safely. You will learn other basic hunting skills, too. This book and your course instructor will give you a lot of useful information. However, none of the information in this book can help you unless you use it each and every time you are around firearms. Make safety a habit!

BASIC HUNTING SKILLS

To bring home the game you are seeking while inflicting the minimal amount of suffering on the quarry, you should learn how to place a shot for a clean kill. To select the best shot placement, you need to know how bullets, shot pellets, and broadhead-point arrows kill game.

The most effective shots are delivered to an animal's vital organs—heart and lungs.

- Aim for the lungs when hunting big game.
- Do not aim for the brain unless you are hunting turkey with a shotgun.
- Be patient and wait for the best possible shot.

The different shot angles are head-on, quartering-away, broadside, quartering-toward, and rear-end. Know which angle offers the best chance for a clean kill for different game with firearms and bows and arrows. Also know which shots should not be taken.

It is your ethical responsibility to stop hunting and search for any wounded animal.

- Wait for at least 30 minutes after your shot.
- For bowhunters, locate and examine your arrow when the animal leaves.
- Follow signs such as blood or tracks.
- If you lose a trail, try again.
- Mark the trail with fluorescent orange flagging.

The best way to approach a downed deer or other large animal is from above and behind the head. Make sure that it is dead, and then tag it immediately. Three factors contribute to spoiled meat—heat, dirt, and moisture.

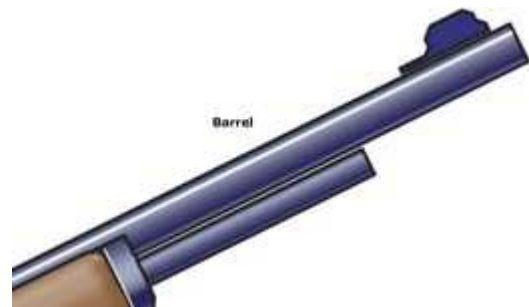
- It is usually best to field dress the animal immediately. A sharp, sturdy knife, such as a butcher's skinning knife, works well.
- To protect the meat and avoid offending others, do not tie the animal to the hood or roof of a car when you are transporting it. A game care kit includes a hatchet, small saw, knife and sharpener, game bags, nylon rope and pulley, license tag, plastic gloves, and many other items.

INTRODUCTION TO RIFLES

PARTS OF A RIFLE

All rifles have three major parts. These three parts are: **Stock, Action, Barrel.**

- The stock is the part of the gun that you hold. It helps you hold, aim, and fire the gun.
- The action is the part of the gun that loads, fires, and unloads the cartridges.
- The barrel is the part of the gun that sends the bullet to the target.



RIFLING IN THE RIFLE OR HANDGUN BORE

Why are some long guns called rifles? The drawing above shows the bore of a rifle or handgun barrel and a shotgun barrel. The spiral grooves inside the rifle barrel are called rifling. Rifles get their name from the rifling inside the barrels. The rifling inside a rifle barrel makes bullets spin. Spinning helps bullets fly accurately, point first, toward the target. All modern rifles have rifling in the barrel. Modern handguns also have rifling in the barrel.

Most shotgun barrels do not have rifling in the barrels.



COMMON RIFLE ACTIONS

Single shot rifles are usually break or bolt actions. Repeating rifles include the bolt-action, lever-action, pump-action, and semi-automatic types. Operating the lever, bolt, or forend ejects the empty cartridge case, chambers a new round of ammunition, and cocks the gun. There are five common types of rifle actions:

- Bolt-action
- Lever-action
- Pump-action

- Semi-automatic action
- Break-action

When handling any firearm, keep the gun pointed in a safe direction at all times! Keep your fingers away from the trigger unless you are ready to shoot! When you unload bolt-action rifles, always look and feel into the open action. Double check to make sure that there are no cartridges in the chamber or magazine.

A RIFLE'S CALIBER

Rifles and handguns are measured in caliber. Caliber is a measurement of the diameter of the bullet or the bore. Caliber is generally measured in hundredths or thousandths of an inch. Two calibers using inches as a measurement are:

- .22—Means 22/100th of an inch. A cartridge example is the .22 LR.
- .30—Means 30/100th of an inch. A cartridge example is the .30-30.

A decimal point (.) always precedes the caliber when using inches. Sometimes the metric system (millimeters) is used. Two metric calibers are:

- 6 mm—Has a bore diameter of 6 mm. Examples are 6 x 47 and 6 mm Remington.
- 7 mm—Has a bore diameter of 7 mm. Examples are 7 x 57 and 7 mm-08. The larger the caliber number, the larger the diameter of bullet that the gun shoots. For example, a 7 x 57 rifle uses a larger diameter bullet than a 6mm Remington rifle. A .30-30 rifle shoots a larger diameter bullet than a .223 Remington rifle.



RIFLE SAFETY MECHANISMS

The job of the safety is to prevent a firearm from firing. When the safety is "on," the gun should not be able to fire. When the safety is "off," the gun is ready to fire.

The safety is located in different places on different rifles. Also, the safety moves in different directions for the "on" position with different firearms. Be sure you know the location of the safety and how it works on your rifle! Use the safety at all times.

The red outlines indicate where safeties are typically located on rifles.



WHAT YOU LEARNED

All rifles have three major parts—the stock, the action, and the barrel.

- The stock helps you hold, aim, and fire the gun.
- The action loads, fires, and unloads the cartridges.
- The barrel sends the bullet to the target.



Rifles, shotguns, and handguns have many similar parts. The bolt-action rifle is a commonly used firearm.

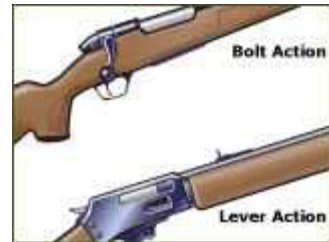
The rifling inside a rifle or handgun bore makes bullets spin so that they fly accurately, point first, toward the target. Most shotgun barrels do not have rifling.

The five common types of rifle actions are bolt action, lever action, pump action, semi-automatic action, and break action.

To use a bolt-action rifle, lift the bolt handle up and pull it back to open the action. Push the bolt handle forward and turn it down to close the action. Most bolt-action rifles have a magazine that holds extra cartridges. Working the bolt after firing ejects the empty case and loads a fresh cartridge from the magazine.



To use a lever-action rifle, pull the lever downward and forward until it stops and then pull it back up toward the stock. Working the lever moves cartridges from the magazine into the chamber and also cocks the hammer for firing. Lever-action rifles are difficult guns for beginning shooters to use. To use a pump-action rifle, pull the forend back toward the trigger guard to open the action. Push the forend away from the trigger guard to close the action. If the gun is cocked, you must press the bolt-lock lever or button to open the action. Pump-action rifles usually have a tubular or box magazine.



To use a semi-automatic rifle, pull the operating handle back to open the action. Press the release button to close the action. Each time you squeeze the trigger, the semi-automatic rifle fires, ejects the empty case, and loads a fresh cartridge from the magazine. Semi-automatic rifles usually have a tubular or box magazine.



To use a break-action (hinge-action) rifle, push the lever to one side and then push down to open the action. Push the forend and barrel upward to close the action. Break-action rifles do not have magazines.



Rifles and handguns are measured in caliber. The larger the caliber number, the larger the diameter of bullet that the gun shoots. To find the correct ammunition for your rifle, look on the rifle's barrel. Make sure the numbers stamped on the barrel match the numbers on your ammunition.



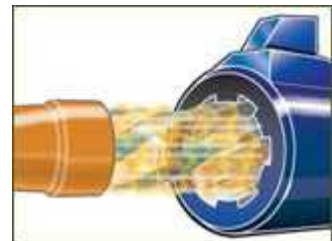
A safety is designed to prevent a firearm from firing. When the safety is "on," the gun should not fire. When the safety is "off," the gun is ready to fire. Always use your safety, but remember that a safety is a mechanical device that can fail. A safety is not a substitute for safe gun handling.



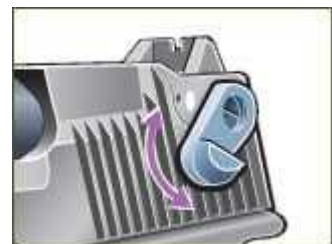
A sight is used to aim rifles and handguns. The three types found on rifles are the open sight, the aperture (peep) sight, and the telescopic sight. Here are some of the Washington laws and regulations that apply to anyone who hunts with a rifle.



- All rifles must have a minimum barrel length of 16 inches.
- You must be at least 18 years of age to buy a rifle from a licensed firearms dealer.
- Minors under 18 years of age may possess a firearm if they are attending a hunter safety course, are hunting or trapping with a valid license, or meet one of the other exceptions.
- Rifles used to hunt big game should be powerful enough for the game being hunted.
- Centerfire rifles used to hunt big game (except cougars) must be at least .24 caliber.
- Fully automatic firearms are illegal for hunting.



Washington has specific seasons for hunting deer, elk, goat, sheep, moose, and bear with rifles. Check the annual Hunting Seasons and Regulations pamphlet from the Washington Department of Fish and Wildlife for open seasons, dates, units, and requirements for special applications.



INTRODUCTION TO BOWHUNTING

Man has hunted with a bow and arrow for thousands of years. Approximately 20,000 hunters in Washington use a bow and arrow to hunt bear, deer, elk, and other game.

Historically, only the three types of bows below have been legal for bowhunting in our state: the long bow, the recurve bow, and the compound bow.

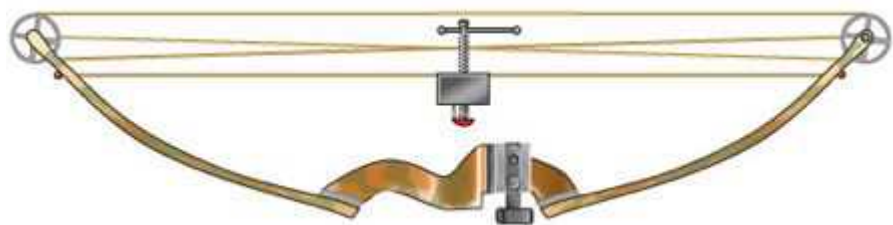
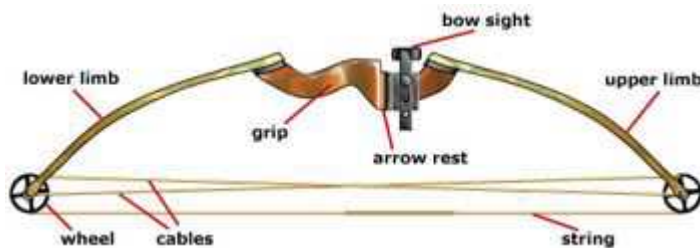
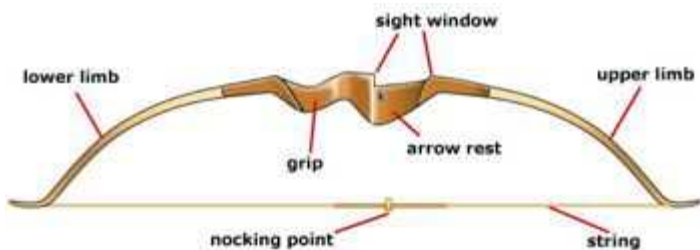
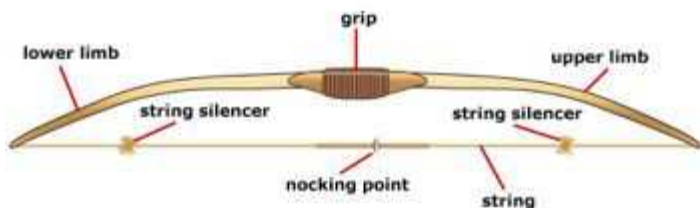
STRINGING A BOW

All bows require a bowstring. Compound bows always have the bowstring attached to the bow. Long bows and recurve bows are strung when they are used and unstrung when they are stored. The correct and safest way to string a long or recurve bow is by using a bowstringer.

LONG BOW AND RECURVE BOW

Long Bow Recurve Bow Compound Bow

The most popular bow today for hunting is the compound bow. The compound bow is so popular because it is easier to draw and hold than the long bow and the recurve bow. The long bow and the recurve bow require greater strength to draw and hold. All three bows require much practice before a person can develop the shooting skills necessary for hunting.



Bow Press To replace compound bowstrings, you must use a bow press or have double tears at the end of each cable.

Crossbow This is another type of bow, but it generally has not been legal for bowhunting in Washington. Some states allow all hunters to use crossbows. In Washington, persons with a disability who have a special permit are allowed to hunt with crossbows. Washington now allows modern firearm tag holders to hunt with a crossbow during modern firearm seasons in firearm restriction areas.



It is unlawful to hunt wildlife with any bow crossbow equipped with a scope, except for visually-impaired hunters who apply for a special permit.

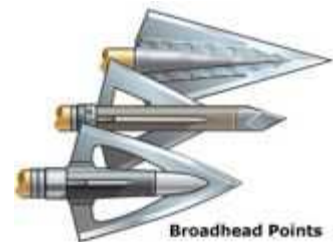
TYPES OF ARROWHEADS

Primary Rules of Bowhunting Safety There are some basic safety rules just as with firearms. One important safety rule is **never dry-fire a bow**. Dry-firing a bow means to pull back a bowstring without an arrow and then release the bowstring. Dry-firing can damage and even break bows. Never dry-fire a bow without an arrow!

Another archery safety rule is to **match the arrow to the draw weight of the bow**. There are many different types of arrows available today. You can buy aluminum arrows, wood arrows, etc.; but the arrow must be strong enough for the bow you plan to use. Never shoot arrows which don't match the bow. You can get more detailed information from archery shops and/or archery clubs if you don't know how to match arrows to your bow. Never use arrows which are bent, cracked, or damaged.

This next special safety rule applies to bowhunting. **Never hunt without a covered quiver!** The quiver holds extra arrows. There are many different types of quivers. Usually, they attach to the bow. The only quiver you should use while hunting is a quiver that covers the broadheads. This type of quiver will protect your broadheads and prevent you from cutting yourself as you reach for an arrow.

A fourth archery safety rule is to **remain alert whenever you are around broadheads!** Big game archery hunters are required to use broadheads. Broadheads are razor-sharp and cut very easily. Most bowhunting incidents in Washington are self-inflicted. This means that the hunter hurts himself! Usually, the injury is a cut from a broadhead.



Archery Equipment Safety Before practicing or hunting, an archer must examine each arrow to make certain that there are no cracks or breaks in the shaft and that the nock is in good condition. A cracked or broken nock can be replaced, but a shaft that is bent or has cracks or breaks should be discarded. Never use a cracked arrow. The shaft may shatter on release and be driven into the shooter's wrist or arm. Some common types of damage to look for are:

- Cracks and splinters in wood arrows
- Creases, dents, or cracks in aluminum arrows
- Crushed sidewalls on fiberglass or graphite arrows

WHAT YOU LEARNED

Three types of bows that are legal for bowhunting in Washington are the long bow, recurve bow, and compound bow. The most popular is the compound bow. It is also easier to draw and hold than the other two types.

Persons who have a disability and a special permit are allowed to hunt with crossbows. In certain areas, modern firearm hunters also are allowed to hunt with a crossbow.

The types of arrowheads are bullet point, blunt point, field point, JUDO point, fish point, and broadhead points.

Here are some safety rules for bows and arrows.

- Never dry-fire a bow.
- Match the arrow to the draw weight of the bow.
- Never hunt without a covered quiver.
- Remain alert whenever you are around broadheads.
- Before practicing or hunting, examine each arrow.
- An arrow with a bent, cracked, or broken shaft should be discarded.
- A cracked or broken nock can be replaced.

Broadheads must be razor-sharp for hunting. To prevent injury:

- Use a special wrench to screw on broadheads.
- Keep broadheads covered in a quiver while going to and from the field.
- Use great caution while dressing bow-killed game.

Here are some of the Washington laws and regulations that apply to all bowhunters.

- Bows used to hunt big game must have a draw weight of at least 40 pounds.
- Arrows used to hunt big game must weigh at least 6 grains per pound; the minimum arrow weight is 300 grains, including the broadhead. Broadheads must be sharp and be at least 7/8" wide. Barbed broadheads are illegal.



- Bowhunters may not shoot at wildlife from a vehicle or from across or along a public road.
 - Bowhunters may not use any device attached to the bow that allows the bow to be held at full draw.
 - Bowhunters may not have electrical devices attached to the bow or arrow.
- Washington has specific archery seasons for hunting deer, elk, goat, sheep, moose, bear, and small game. Check the annual Hunting Seasons and Regulations pamphlet from the Washington Department of Fish and Wildlife for open seasons, dates, units, and requirements for special applications.

SHOTGUNS

All shotguns have three major parts—the stock, the action, and the barrel.

- The stock helps you hold, point, and fire the gun.
- The action loads, fires, and unloads the shotshells.
- The barrel sends the shot pellets to the target.

Some shotguns are called smoothbores because the inside of the barrel is smooth. Shotguns usually shoot pellets (shot).

Shotguns are another type of long-barreled firearm used by hunters. The pump-action shotgun is a commonly used firearm. The four common types of shotgun actions are bolt action, pump action, semi-automatic action, and break action. The break action can be single or double barrel.

To use a bolt-action shotgun, lift the bolt handle up and pull it back to open the action. Push the bolt handle forward and turn it down to close the action. Most bolt-action shotguns have a magazine that holds extra shotshells. Working the bolt after firing ejects the empty hull and loads a fresh shotshell from the magazine.

To use a pump-action shotgun, pull the forend back toward the trigger guard to open the action. Push the forend away from the trigger guard to close the action. If the gun is cocked, you must press the bolt-lock lever or button to open the action. Pump-action shotguns usually have a tubular magazine. To use a semi-automatic shotgun, pull the operating handle back to open the action. Press the release button to close the action. Each time you squeeze the trigger, the semi-automatic shotgun fires, ejects the empty hull, and loads a fresh shotshell from the magazine. Semi-automatic shotguns usually have a tubular magazine.

To use a break-action (hinge-action) shotgun, push the lever to one side and then push down to open the action. Push the forend and barrel upward to close the action. Break-action shotguns do not have magazines.

Shotguns are measured in gauge. The larger the gauge number, the smaller the bore diameter. To find the correct gauge and shell length for your shotgun, look on the shotgun's barrel. Make sure the gauge stamped on the barrel matches the gauge on your ammunition. It is safe to fire a shell with a shorter length than your shotgun's chamber, but do NOT put a longer shell into a shorter chamber.

Be sure to use the right ammunition in your shotgun. If fed into a 12-gauge gun, smaller shotshells (like 20-gauge shells) will slip past the chamber and lodge in the barrel. This can cause serious personal injury or damage if a 12-gauge shell is fired.

A safety is designed to prevent a firearm from firing. When the safety is "on," the gun should not fire. When the safety is "off," the gun is ready to fire. Always use your safety, but remember that a safety is a mechanical device that can fail. A safety is not

a substitute for safe gun handling. The choke on a shotgun controls the spread of the shot and is either a fixed choke or a screw-in, interchangeable choke. The most common types of chokes are full, modified cylinder, improved cylinder, and cylinder. Make sure that your choke is suitable for the wildlife you are hunting.

Since shotguns are pointed at a moving target and not aimed like a rifle, the sight is usually only a small, round bead near the muzzle. When shooting at a moving target with a shotgun:

- Keep your cheek on the stock.
- Keep both eyes open and focused on the target.
- Swing through the target, pull the trigger, and follow through.

Here are some of the Washington laws and regulations that apply to anyone who hunts with a shotgun.

- All shotguns must have a minimum barrel length of 18 inches.
- You must be at least 18 years of age to buy a shotgun from a licensed firearms dealer.
- Minors under 18 years of age may possess a firearm if they are attending a hunter safety course, are hunting or trapping with a valid license, or meet one of the other exceptions.
- Shotguns used to hunt upland birds and waterfowl must not hold more than three shotshells.
- Shotguns used to hunt bear must be 10 gauge, 12 gauge, 16 gauge, or 20 gauge and shoot slugs or #1 or larger buckshot.
- Shotguns used to hunt elk, goats, sheep, or moose may be 10 gauge or 12 gauge if they use slugs.
- Shotguns used to hunt waterfowl must use approved non-toxic shot ammunition.

HANDGUNS

Handguns can be either revolvers or pistols.

- They have three major parts—the frame, the barrel, and the action.
- The shorter barrel makes it more difficult to maintain safe control of a handgun.
- Not all handguns have a safety. Here are some safety tips for handguns.
- Keep handguns out of the reach of inexperienced shooters and children.
- Do not handle a gun that is new or unfamiliar to you.
- Always keep the muzzle pointed in a safe direction.
- Carry handguns with an empty chamber under the hammer.
- Make sure handguns are unloaded before you handle them.

The four common types of handgun actions are revolver, semi-automatic pistol, break-action pistol, and bolt-action handgun.

Revolvers can be fired only by squeezing the trigger. To fire a single-action revolver, you must cock the hammer by hand before each shot. To fire a double-action revolver, you can squeeze the trigger to cock and fire the gun or you can cock the hammer by hand and then squeeze the trigger.

Semi-automatic pistols are either single action or double action. To fire a single-action semi-automatic, you must cock the hammer by hand before the first shot only. To fire a double-action semi-automatic, you just squeeze the trigger to fire the first shot.

The break-action pistol is similar to the break-action rifle or shotgun. These guns shoot pistol, rifle, or shot cartridges. The bolt-action handgun is similar to the bolt-action rifle or shotgun. These guns may shoot rifle cartridges.

Here are some of the Washington laws and regulations that apply to handguns.

- It is illegal for a licensed dealer to sell a handgun to anyone under 21 years of age.
- Centerfire handguns used to hunt big game must be at least .24 caliber and have a barrel that is at least four inches long.

AMMUNITION

Rifles and handguns use a cartridge. Shotguns use a shell (shotshell).

The two types of rifle cartridges are centerfire and rimfire. The four main parts of cartridges are the case, primer, powder, and bullet. Common rifle and handgun calibers are .45, .44, .40, .357, .308, .270, and .22.

The bottom of a centerfire cartridge usually has a number stamped on it. Use this number to make sure your ammunition matches your gun.

When you pull the trigger on a rifle, shotgun, or handgun, the firing pin strikes the primer in the base of the ammunition. This causes the primer to explode. The primer ignites the gunpowder, generating gas pressure. The pressure forces the projectile(s) out of the barrel.

Cartridges are very powerful. Make sure you know the range for your rifle or handgun.

Shotshells contain shot, pellets, or slugs. All shotshells are centerfire. The five main parts of shotshells are the hull (case), primer, powder, wad, and shot. The bottom of the shotshell usually has the gauge stamped on it. Make sure your ammunition matches your shotgun. Only carry the shotshells for your shotgun.

Choose your shot size based on the game you are hunting. The smaller the shot number, the larger the shot size. Use smaller shot sizes for smaller game and larger sizes for larger game.

Shotshells do not shoot as far as cartridges but are still dangerous when fired carelessly. Make sure you know the range for your shotgun.

Here are some of the Washington laws and regulations for ammunition that apply to all hunters.

- Waterfowl hunters must use non-toxic ammunition.
- Shotguns used to hunt upland birds and waterfowl must not hold more than three shotshells.
- Shotguns used to hunt deer and bear must use slugs or #1 or larger buckshot. It is illegal to use 28-gauge or .410 shotguns to hunt deer or bear. You may hunt big game other than deer or bear with 10-gauge or 12-gauge shotguns using slugs.
- Unless you have the appropriate deer or elk tags with you during modern firearm deer or elk seasons, you may not hunt forest grouse with centerfire rifle or handgun ammunition that is .24 caliber or larger or with shotguns containing slugs or buckshot.
- Non-toxic shot made of steel, tungsten alloy, or bismuth is required throughout the U.S. for waterfowl hunting.

SURVIVAL

All hunters should know basic survival rules. The two most important are BE PREPARED and DON'T PANIC. If an unexpected situation occurs, you need a calm head, food, water, and shelter.

- Remember S.T.O.P.
- Remain calm.
- Stay put so that others can find you.
- Plan ways to signal for help.

Never hunt alone. Hunt with safe hunters who also know how to survive in the woods.

Mark a map to show where you plan to hunt. Leave a copy of the map and other information with a responsible person. Let them know where and with whom you plan to hunt, and when you expect to return.

Always carry a survival kit with you and know how to use it.

Know the weather conditions for the area where you plan to hunt, and dress for the weather.

- Wool clothes, and some modern synthetic fibers, provide warmth even when wet.
- Weather conditions can change quickly during hunting season. Layer your clothes to be prepared for this. Hypothermia occurs when your body loses heat faster than it can produce it. It is caused by being exposed to body sweat, cold, wet, and wind or by falling into water.
- To prevent hypothermia, keep warm, drink liquids, and keep eating.
- To treat mild hypothermia, cover the victim's head, remove wet clothing, provide warm liquids, and have the victim rest near a heat source.
- To treat severe hypothermia, send for medical help. While you wait, handle the victim gently and provide warmth using warm liquids (if conscious), good insulation, and warm objects or your own body heat.

A wind chill chart tells you what the temperature feels like when wind speed is combined with the air temperature. Pay attention to wind chill advisories and warnings.

Heat exhaustion and heat stroke can occur when you get too hot. To prevent heat exhaustion or heat stroke:

- Layer your clothing.
- Wear a wide-brimmed hat.
- Drink plenty of water.

Having a fire helps keep you warm, gives you a way to signal for help, lets you cook, and keeps you calm and busy while you wait for help. Be sure you know how to build a fire – you will need matches or another fire starter, tinder, and fuel.

Knowing how to use a map and a compass can help you avoid getting lost. Learn these skills before you go afield.

Take safety precautions with any vehicles you use for hunting.

- Always wear a personal flotation device (life jacket) in a boat.
- Wear a helmet when riding on a mountain bike or a three- or four-wheeled vehicle.
- For any vehicle you use as a base camp, make sure that it is in good repair and that the heating system has good ventilation.
- Wildlife-transmitted diseases have been reported in Washington. Visit a doctor if you have contact with wild animals and then become ill.

If you prepare for outdoor emergencies, you can beat the enemies of survival: pain, cold, thirst, hunger, fatigue, boredom, and fear.

SWITCHING INTO SURVIVAL MODE

Hunters enjoy the great outdoors. They travel to forests, mountains, and rivers in search of small game, big game, waterfowl, and other animals. They spend time hunting, hiking, and camping in nature.

Suppose that you are hunting with friends or family in some foothills 100 miles away from home. It has been raining all morning; and now a heavy, thick fog rolls in. You are alone. You can't see your fellow hunters. When you call their names, nobody answers. What are you going to do now?



Are YOU prepared? Can YOU survive alone in the woods, fields, and mountains? Do YOU know what to do if you are lost?

All hunters should know basic survival rules. If they do, they can handle situations like the one above. If they don't know these basic rules, they may never return to their hunting camp.

The two most important things to remember are **BE PREPARED** and **DON'T PANIC**. You need to be ready for survival situations the minute you leave your home, your camp, or your vehicle. **If you wait until you are wet, alone, and in a thick fog before you think about survival, you are already in deep trouble!** Plan ahead.

STOP—STOP, THINK, OBSERVE, PLAN

To survive an unexpected situation, such as getting lost, you need only four things: a calm head, food, water, and shelter. Don't panic! All of the food, water, and shelter in the world cannot help you if you panic in a survival situation. Keep calm and use your head! **Your brain is your best survival tool!** You know what a **stop** sign is. Here's what "**stop**" means in a survival situation:

- **Stop** when you realize you've got a problem. The first thing to do is admit to yourself that you are in trouble.
- **Think** about what you need to do to survive.
- **Observe** the area; and look for shelter, fuel, etc.
- **Plan** how you are going to use your survival kit and the other resources available to you. Don't wait until dark to plan!

Remain calm. Think clearly. Use the tools you have available to you.

Stay put if you are lost. Don't wander around and get yourself into deeper trouble. If you let somebody know where you were



going to hunt, they'll be looking for you in that area. Aimless wandering will only make the search more difficult. Rescue teams are trained to find you, so stay put!

Plan ways to signal for help. A signal mirror, smoke from a fire, etc. can all be used. One signal for help is three shots evenly spaced. Remember that shots are common during daylight hours in the hunting season. Wait until nightfall to shoot! Three of anything—toots on a whistle, smoke signals, etc.—also signal a need for help.

BASIC SURVIVAL RULES

1. Remain calm in an emergency. Avoid panic. Stay put!
2. Never travel or hunt alone.
3. Tell someone where you will be hunting and when you should be returning.
4. Know the weather conditions in the area where you will be hunting.
5. Dress for the weather ... but be prepared for worse weather!
6. Avoid hypothermia. Know how to treat it if it strikes!
7. Carry a survival kit with you at all times.
8. Know how to build a fire even when everything is wet. Carry the materials you will need.
9. Carry a map and compass and know how to use them!
10. Be prepared to deal with the enemies of survival!

IMPORTANCE OF PLANNING AND PREPARATION

Plan Your Hunt You should never hunt alone. Always hunt with others, and always be careful when choosing hunting partners! Make sure your hunting partners are safe hunters and also know how to survive in the woods! One very useful tool in planning a hunt is a basic map. Identify and mark on your map the area where you plan to hunt. Leave a copy of the map and information about your hunting area with a responsible person. Stay out of dangerous or unfamiliar areas such as cliffs, slide areas, and iced-over lakes or streams.

Notify Others of Your Plans Make sure that other people know where you are hunting and when you plan to return from your hunt. Search-and-rescue teams only look for people whom they know are lost! If you should become lost, nobody will look for you unless they know you are lost. Tell friends and family at home about your hunting plans. When you are out hunting, you also can leave a note in your car, truck, or camp about your hunting plans for that day. Be sure to note if you change your plans. If there is a place to register, such as a ranger station, do so!

Hunting Plan Before you depart, leave a hunting plan with a family member or friend. A hunting plan tells where and with whom you intend to hunt, and when you expect to return. It also should contain specific directions on your route to your destination and any alternate destination you may have if bad weather changes your plans.



Carry and Use a Survival Kit You can buy a survival kit, or you can make your own. It doesn't matter how much money you spend or how many items you include in your survival kit. The two most important things to remember are that you must **CARRY IT** and know how to **USE IT!** A survival kit won't help you if you leave it back in camp. And even an expensive survival kit won't help you if you don't know how to use the items in it.

A basic survival kit should include the following items:

- Waterproof matches/lighter
- Signal mirror
- Pocket knife, wire saw
- Flashlight/extra batteries
- Plastic sheet/garbage bag
- First-aid material(s)
- Map/compass
- Deck of cards
- Cup/pot
- Extra ammunition
- Fire starter/candles
- Whistle
- Tube tent
- Rope/string
- Emergency blanket
- Safety pins
- Emergency food/water
- Water purification tablets



Different people have different needs. Some survival kits will have many more items than those listed above. For example, you might want to carry extra clothing in your kit.

Think of your survival kit as an emergency kit. Make sure that you check the equipment in your survival kit each year before you need it in an emergency!

Know the Weather Conditions in Your Area The weather at home and the weather in your hunting area might be very different! Check the weather forecast before you leave, and be sure that your hunting clothes are suitable for the weather.

Some of our worst weather is during hunting season ... be prepared for it! Cotton clothes and blue jeans are terrible to wear in wet, windy weather. Cotton actually makes you feel colder in such weather. Wool clothes, and some modern synthetic fabrics, provide warmth even when wet.

Be Prepared for Worse Weather Weather conditions can change quickly during the hunting season. A light rainfall can change to freezing rain in just a few minutes. Three feet of snow can fall overnight. Temperatures can drop 30 to 40 degrees in just a few hours. You need to be prepared to survive the worst weather conditions ... not just the weather conditions of today.

Weathermen forecast the weather; however, the forecasts can change very quickly. Choose clothes that will handle changes in the weather. One way to prepare for the worst conditions is to use the layering principle. You wear or carry with you several layers of clothing. As weather conditions change, you add or remove additional layers.

Overheating causes perspiration, and wet clothing makes you cold! Layer your clothes. Control your body temperature with easy on, easy off clothes. Don't forget that a hat helps keep you warm.

Dry is best! Dry, synthetic fleece or wool clothing is your best insulation.



Know How to Build a Fire If you are alone, lost, or in a survival situation, fire is really man's best friend. A fire can keep you warm, and you can use it to signal for help. A good fire also will help keep you calm, allow you to cook, and keep you busy as you wait for help to arrive!

To start a fire, you will need three things:

1. A source of heat to start a fire.
2. Tinder and kindling to get the fire going.
3. Fuel to keep the fire burning.

In your survival kit, you should have at least one ready source of heat (either waterproof matches or a disposable lighter) and some type of fire starter. You will need to find kindling and fuel to build the fire. You should find these items before you start to make your fire!

A tepee of larger sticks enclosing the kindling is a good way to start a fire. You will need about ten large armloads of firewood to keep a small fire going all night. Collect your firewood before dark! It's often very wet during hunting season, but there are many materials which will burn in such conditions. Check with your classroom instructor to find out what's available in your local area.

If you do not have very good fire-building skills, you may need to add some additional materials to your survival kit to help you get a fire started in wet, hunting-season conditions.

Practice Safety and Survival Around Vehicles

Hunters use a variety of vehicles for hunting. Boats, bicycles, off-road vehicles, pick-up trucks, campers, and recreational vehicles are often found in or around hunting camps. Unfortunately, some hunters forget the special safety precautions that apply to these vehicles.

Rough weather or a snag in a river can quickly capsize a boat. Everybody in a boat should wear a personal flotation device (PFD) as long as they remain on the water. You may be a great swimmer, but a dunk in frigid water will leave you numb in moments. Wearing a PFD could mean the difference between life and death.

Mountain bikes and three- and four-wheeled vehicles are now commonly found in the woods. All riders should wear a helmet to protect themselves in the event of a fall. Never carry a loaded firearm while riding!

Many hunters use pick-up trucks, campers, or recreational vehicles as part of their base camp. Sometimes hunters use their vehicles to fight off the fall chill, but they forget that a faulty exhaust or heating system can lead to carbon monoxide poisoning ... and death. Make sure that your hunting vehicle is in good repair and that you always have proper ventilation when using heating systems.

Avoid Disease and Illness

From Water "Don't drink the (untreated) water!" is a good rule of thumb when hunting or hiking. Bring your own safe supply of drinking water, or boil or treat water before drinking it. You may think that the water five miles from the nearest road will be pure ... but both humans and animals carry disease! "Beaver fever" (giardiasis) is a very unpleasant illness that is easily avoided—drink only water that you carry in or treat.

From Wildlife Wild animals serve as the host to a variety of parasites, but very few of them become problems for hunters. However, wildlife-transmitted diseases have been reported in Washington in recent years, including Lyme disease, Hanta virus, and bubonic plague. While these are not common, they are potentially present.

Check your body for bites and unusual marks if you notice a large number of ticks on an animal you have just harvested. Visit a doctor if you have come into contact with wild animals and experience unusual symptoms after returning from a hunting trip.

Fight the Enemies of Survival People who are unprepared for outdoor emergencies can be beaten by these "enemies of survival." Don't let them beat you!

- **Pain**—Treat pain using your first-aid materials. Take care of pain right away.
- **Cold**—Get out of cold, wet weather. Construct a shelter. Build a fire. Get warm.
- **Thirst**—You must have water to survive ... but don't eat snow! Your body uses too much heat to melt snow, and it only makes you thirstier! Treat water with iodide tablets or boil it before drinking.
- **Hunger**—Hunger pains will bother you, but they won't kill you! You can go without food for two to four weeks and still live!
- **Fatigue**—Save your energy! Don't tire yourself. Gather fuel for your fire and improve your shelter as needed, but don't overdo it! Get lots of rest.
- **Boredom**—Include a deck of cards in your survival kit. Carry a small pocket radio. Bring along something to write with or to read. Avoid feeling bored and lonely!
- **Fear**—Fear is normal! Everybody feels fear in a survival situation. Remain calm. Think about why you are afraid, and try to use common sense to overcome your fears.

Think back to the survival situation at the beginning of this unit. If you have planned your hunt and if you have prepared your survival kit properly, what would you do? Would you survive?

All hunters should know basic survival rules. The two most important are BE PREPARED and DON'T PANIC.

If an unexpected situation occurs, you need a calm head, food, water, and shelter.

- Remember S.T.O.P.
- Remain calm.
- Stay put so that others can find you.
- Plan ways to signal for help.
- Never hunt alone. Hunt with safe hunters who also know how to survive in the woods.

Mark a map to show where you plan to hunt. Leave a copy of the map and other information with a responsible person. Let them know where and with whom you plan to hunt, and when you expect to return.

Always carry a survival kit with you and know how to use it.

BIG GAME HUNTING

Washington offers a lot of opportunity to interested hunters. Big game, small game, upland bird, waterfowl, and turkey hunting are available in many areas of the state. This unit is included to give you some basic information about some of the hunting choices available in the Evergreen State.



This is the most popular type of hunting in Washington. Deer hunting attracts the most interest, with more than 150,000 people hunting in an average year. Elk hunting is second on the list of popular big game animals hunted, and about 75,000 people hunt elk. There are about 10,000 bear hunters annually. Many hunters are interested in hunting goats, sheep, and moose; however, since these are permit hunts (which means that hunters must be selected in a lottery), very few people actually get to hunt these animals.

Deer are a very popular hunted species in Washington state.

Deer in Washington There are three species of huntable deer in Washington:

- Mule deer
- Black-tailed deer
- White-tailed deer

A fourth deer species, the Columbian white-tailed deer, is found in southwest Washington; but it is protected and may not be hunted.

There are about 390,000 deer in the state, with about 175,000 black-tails, 140,000 mule deer, and 80,000 white-tails.

MULE DEER

The mule deer is found along the eastern slopes of the Cascades and throughout all of eastern Washington. Its antlers are like those of black-tailed deer, except they are usually larger and have more points for the same age class. Most yearling bucks are two-point bucks. Main identification features of the mule deer are its narrow, white tail with a black tip and rebranching antlers.

BLACK-TAILED DEER

Black-tailed deer are found throughout western Washington. The antlers are similar to those of the mule deer, except smaller. Yearling black-tails usually have only spike antlers. The main identification feature is the tail, which is black on top. While running,

the tail is erect, revealing a white underspot. Hunters may mistakenly refer to the deer as a white-tail when they see the underside.

WHITE-TAILED DEER

White-tails are Washington's least abundant deer. The white-tailed deer is found primarily in the northeastern part of the state. This deer is easily identified by its large tail that is reddish-brown on the topside but white underneath. The white-tail has the largest tail of all deer. White-tailed deer antlers do not fork like the mule and black-tailed deer. All tines rise from a single main beam.

DEER CHARACTERISTICS

Deer antlers, along with size and weight of a deer, provide a good indication of the animal's health. It is impossible, however, to tell the age of a deer from its antlers. As a general rule, bucks start to develop their first true antlers when they are ten months old, and nearly all black-tails will grow spikes as yearlings. The majority of white-tails and mule deer bucks will grow forked antlers as yearlings, although they are very small. The most accurate method of determining the age of a deer is by examining its teeth.

The main food items of deer are "browse," primarily the growing tips of woody, brushy plants. Some common plants eaten by deer in western Washington are trailing blackberry and salal. In eastern Washington, deer will feed on bitterbrush, buckbrush, aspen, and alder. In late winter and early spring, most deer include grass in their diet.

Deer are most active in the early morning and evening hours. Often, deer will feed during the night. Most of a deer's movements relate to finding a suitable feeding area. In western Washington, most deer will remain within a one-square-mile area. In eastern Washington, deer may migrate and cover 40 miles or more during spring and fall.

ELK IN WASHINGTON

The wapiti, or elk, is one of the largest members of the deer family. Only the moose is larger. There are two subspecies of elk in Washington:

- Roosevelt elk
- Rocky Mountain (sometimes called Yellowstone) elk

The Roosevelt elk is found in western Washington, while the Rocky Mountain elk is found in eastern Washington. The Rocky Mountain elk is slightly lighter colored than the Roosevelt elk, and it is slightly smaller in body size. The most distinctive feature on both subspecies of elk is the rump patch, which is a pale white or cream color. Adult bull elk can weigh as much as 1,100 pounds, although the average weight is usually between 500-700 pounds.

The elk herds of Washington are now found in seven major areas of the state. The two major herds are the Yakima (13,300 animals) and the Olympic (6,000 animals). The Blue Mountain herd (4,500 animals), Wenatchee Mountain herd (6,500 animals), and Saint Helens herd (12,200 animals) comprise most of the remaining population. Smaller elk herds are the Mt. Rainier (4,000 animals), Willapa (3,000 animals), Nooksack (300 animals), and Selkirk (1,300 animals).

In general, grasses and sedges are the main items in the diet of wild elk, although local habitat conditions may cause this to vary. In habitats which are overgrazed, elk will rely heavily on browse and will include in their diet such shrubs and trees as fir, maple, serviceberry, dogwood, aspen, pine, willow, and sage.

As with deer, tooth analysis is the best way to determine the age of individual animals. Antler size is not an accurate way to age bull elk.

Natural enemies of elk in Washington include the cougar, coyote, dogs, bobcat, bear, and golden eagle. The latter three animals will generally attack and consume only very young calves or severely injured animals.

BEAR IN WASHINGTON

Black bears are common in Washington, and populations are related to the amount of available habitat. Black bears are the smallest of North American bears, and they live primarily in forested areas, including swamps and mountains. Forests interspersed with streams and swamps are prime bear habitat. Black bears come in several shades of brown, in addition to the black coat from which they get their name. Adult black bears range from five to six feet in length and weigh from 100-400 pounds. Yearling black bears weigh from 60-120 pounds.

Black bears are primarily nocturnal, preferring to move about under cover of darkness or at dusk or dawn. Bears are usually solitary. Black bears occupy territories that vary considerably in size, depending upon the habitat, the availability of food, and the number of other bears in the area. Larger male bears usually occupy larger territories.

Black bears are omnivorous but mostly vegetarian. Black bears can feed on a variety of plants and animals depending largely upon opportunity. Typical foods include grasses, wood fiber, berries, nuts, tubers, insects, small mammals, eggs, and carrion. Bears seldom starve.

SMALL GAME HUNTING

Although there are many opportunities for hunting small game in Washington, small game hunting is not nearly as popular as big game hunting. Often, hunters pursue small game while they are hunting other species. Popular small game animals include bobcats, raccoons, rabbits and hares, foxes and coyotes. Small game animals are found in all areas which offer suitable habitats. Hunting methods and techniques vary, depending upon hunter skill and knowledge. A hunting license is required to hunt all small game species. Some species, such as coyote, may be hunted year round with few exceptions. Other species, such as cottontails and raccoons, may be hunted only during established seasons.

LICENSE INFORMATION

The small game license in Washington State allows the holder to hunt for wild animals and wild birds except big game. There are additional charges for turkey tags, western Washington pheasant permits, and migratory bird validations.

MIGRATORY BIRDS AND WATERFOWL HUNTING

Mourning doves, geese, and ducks also provide hunters with many hours of hunting activity. All migratory bird and waterfowl hunters are required to have a basic hunting license. In addition, waterfowl hunters 16 years of age and older must possess both a federal and a state migratory waterfowl stamp to hunt waterfowl in Washington. Juvenile hunters under 16 years old are exempt from this requirement for supplemental stamps.

Mourning doves are found primarily in eastern Washington. Waterfowl populations are found throughout Washington. Early September is the traditional season for dove hunting. Dove populations vary from year to year, but typical seasons include a ten dove per day bag limit during the short season. As with all upland bird hunting opportunity, obtaining access and landowner permission are often critical to success.



Although waterfowl populations nationwide have been fluctuating over the past ten years. While populations within Washington are generally doing well, overall numbers nationwide of pintails, mallards, etc. have declined substantially. Bag limits and season length have been adjusted during the past six years to reflect this dramatic change in waterfowl populations.



TURKEY HUNTING

Turkey hunting is growing in popularity in Washington as turkey populations continue to expand across the state. Turkey hunting requires a separate tag in addition to the basic hunting license. Some hunting areas require a permit (obtained via a lottery drawing) to limit the total number of hunters. **Male Turkey! ! Female Turkey**

DEVELOPING WILDLIFE IDENTIFICATION SKILLS

As a responsible hunter, you should educate yourself about wildlife prior to your hunt. The ability to identify species accurately will make you a better hunter and will increase the enjoyment of your hunting experience.

Developing wildlife identification skills is a basic requirement for hunters. Mistakes can lead to illegal harvest of game or non-game animals. To identify game properly, you must learn to recognize key characteristics of the animal you're hunting.

Identifying animals accurately can be a challenge. Sometimes the difference between animals in the same species is subtle, such as the size of their ears or distinctive coloring. Recognizing tracks, scat, food sources, and habitat types also can help you identify animals.

A variety of print and visual resources are available to help you increase your knowledge about wildlife. Television shows that feature hunting and nature topics also can be a good source of information. Wild animals are generally divided into five groups.

LARGE MAMMALS

Wapiti

- Large mammals are large-sized, warm-blooded animals with hair. Young are nourished with milk from the mother.
- Large mammals can be sorted into family groups. Each family has unique features. For example, the deer family, which includes deer, elk, and moose, has cloven hooves—a hoof in two parts. They are also cud chewers, equipped with broad, flat teeth and a hard palate, which rolls and crushes cud.
- Deer also have antlers, which are solid bone and are shed annually. They rub their antlers on trees. Spotting a deer's "rub" on a tree is an indication that deer may be close by. Horns are found on sheep and goats. Horns are hollow and are not shed. Females have horns with half-moon curves, while males have larger horns that curve around each side of the head.
- Large mammals also can be distinguished by diet. Wolves and mountain lions eat only meat, and bears eat plants and meat.

SMALL MAMMALS

Coyote

- Small mammals are smaller-sized, warm-blooded animals with hair. Young are nourished with milk from the mother.
- One of the most common small game animals is the jackrabbit. These mammals have a high birth rate, a high death rate, and a short life span. By studying these animals, you can learn to recognize their tracks.

UPLAND BIRDS

- Popular upland birds that are found across the country include turkeys, pheasants, grouse, and quail. The term "upland" refers to where they are often found.
- The basic shape of upland birds is similar to chickens. They also have short rounded wings that are good for short flights and strong legs that are good for running.
- Most male upland birds have more colorful feathers than females. The female's plain feathers help her provide camouflage cover for her nest.

WATERFOWL AND BIRDS OF PREY

- *Waterfowl*

Waterfowl are warm-blooded animals that live on or near water, and include diving ducks and puddle ducks. Puddle ducks are found primarily on the shallows of lakes, rivers, and freshwater marshes. Puddle ducks prefer to feed on or near the water's surface. They launch themselves directly upward when taking off. Diving ducks inhabit large deep lakes and rivers, coastal bays, and inlets. Diving ducks obtain most of their food by diving. They must run across the water to build up speed to take off.

- *Birds of Prey*

Birds of prey feed on other birds or mammals. Examples are eagles, falcons, and owls. Birds of prey are found throughout North America. All of these birds are protected.

WHAT YOU LEARNED

Big game, small game, upland bird, waterfowl, and turkey hunting are available in many areas of Washington.

Big game hunting is the most popular type of hunting in the state. Species that can be hunted are:

- Mule deer, black-tailed deer, and white-tailed deer
- Roosevelt elk and Rocky Mountain elk
- Black bear
- Small game species that can be hunted include the bobcat, raccoon, rabbit and hare, fox, and coyote.

- Upland birds that can be hunted include the pheasant, quail, chukar, and gray partridge. Regulations for upland bird hunting differ for western Washington and eastern Washington.
- Waterfowl that can be hunted included the mourning dove, goose, and duck.
- Turkey hunting requires both a hunting license and a separate tag. Some areas also require a permit.

Animals that are labeled "rare," "threatened," or "endangered" are fully protected by law.

- Due to their small numbers, big game animals that cannot be hunted in Washington include the grizzly bear, caribou, and pronghorn antelope.
- Protected species also cannot be hunted; this includes the robin, blue jay, hawk, etc.

To be a responsible hunter, you should learn to identify wildlife correctly. Mistakes can lead to illegal harvest of game or non-game animals. Wild animals are generally divided into five groups:

- Large mammals
- Small mammals
- Upland birds
- Waterfowl
- Birds of prey

READING A TOPOGRAPHIC MAP

Whenever you're in a remote or unfamiliar area, a topographic map and compass are a must.

Topographic maps are created from aerial photographs and reveal the contours of the land, including hills, ridges, and valleys, as well as lakes, rivers, creeks, trails, and roads.

- Contour lines show the elevation of the ground.
- Contour intervals reveal how much vertical distance there is between each contour line—closely spaced contour lines indicate very steep slopes.
- Contour lines that are sharply tapered indicate an uphill direction.
- Rounded contour lines typically indicate a downhill direction.

Topographic maps are available at many outdoor stores or may be ordered from:
U.S. Geological Survey
Branch of Distribution
P.O. Box 25286
Federal Center
Denver, CO 80225



National Forest Service Travel Maps show forest road networks and restrictions. They are available from the U.S. Forest Service.

The Washington Department of Fish and Wildlife has a special web site called GoHunt that features interactive mapping for hunting and recreational opportunities in the state. Go to <http://wdfw.wa.gov/mapping/gohunt> to learn more!

SELECTING A COMPASS

The orienteering compass is a critical piece of equipment for outdoor travel. A good orienteering compass has these features:

- Clear base plate that allows you to see the map underneath
- Straight sides for aligning two points or for drawing lines
- Liquid-filled needle housing that keeps the magnetic needle relatively steady when taking readings
- Two arrows: a direction arrow painted on the base plate (or you may use the edge of the compass) is used to point the compass from your starting point to your destination; an orienting arrow, located in the needle housing, is used to orient your compass to your map.



UNDERSTANDING DECLINATION

Topographic maps are drawn to true north (North Pole), which is indicated by the grid lines on the map. However, a compass will always point to magnetic north, which is in the Hudson Bay area. The difference between true north and magnetic north is called "declination." When true north and magnetic north are aligned, you're at zero degrees declination. Your compass needle will point to true north. However, if you're east or west of zero degrees declination, your compass will not be in line with true north.

TO COMPENSATE FOR DECLINATION:

- Center the north arrow (the "N") of the compass dial along a north/south line of the map.
- Check the diagram at the bottom of the map that shows whether magnetic north is to the left or right of true north.
- Turn the compass dial the correct number of degrees left or right as indicated on the map. The "N" is now pointing at magnetic north.
- Hold the compass level in front of you and rotate your body until the tip of the compass needle aligns with the "N" on the compass dial. The direction arrow on the base plate now points in the direction you want to go.

PLOTTING YOUR PROGRESS

As you hike into unfamiliar terrain, you can keep your bearings by taking frequent compass readings and plotting your progress on a map.

- Note key points, such as stream crossings, to help you find your way back.

- Pay particular attention when you reach a high point at the top of a ridge.
- Use the elevation to locate landmarks visible from there.

Learning to set a course and take bearings takes study and practice. The best way to become proficient with a compass is under the guidance of an experienced individual.

GLOBAL POSITIONING SYSTEM (GPS)

- The Global Positioning System (GPS) is a navigation system based on a network of satellites. Users with a GPS unit can determine their exact location (latitude and longitude) in any weather conditions, all over the world, 24 hours a day.
- GPS satellites circle the earth twice a day and transmit information to the Earth. GPS receivers use this information to calculate the user's location by comparing the time a signal was transmitted by a satellite with the time it was received. The time difference tells the GPS receiver the distance from the satellite. By calculating the distances from several satellites, the receiver can determine and display the user's location on the GPS unit.
- Once the user's position is determined, a GPS unit can calculate other information—bearing, trip distance, distance to destination, sunrise and sunset times, and more.
- GPS receivers are accurate to within 15 meters (49 feet) on average. Certain atmospheric factors and other sources of error can affect the accuracy. Accuracy can be improved with a Differential GPS (DGPS) or WAAS (Wide Area Augmentation System).

SNARES

PLACING LOG SNARES IN THE WOODS

The tools shown above are not traps, but a means to catch wild game if it is cornered. Remember, even small animals like rabbits, coons, squirrels, or others, can cause scratches and even bite you. Keep in mind, you will have to kill the animal if you loop one.

This catch only works with small game, so do not attempt it with large game like deer, moose, or bear. If you loop a bear, you're on your own, because I have no idea what to suggest.

Try to kill the animal quickly, with a large rock or a spear you have made from a sharpened stick. Never allow an animal to suffer needlessly. I may advocate the taking of wild game to survive, I do not like the thought of it suffering needlessly.

The Apache foot trap is one that may or may not work well. First, the deer or other large game **MUST** step into the trap. The sharp stakes in the hole may or may not hold the animal. The tips to the sharpened stakes must be close together so the foot will become caught. Keep in mind, you will have to kill the animal if you trap one. The Apache foot trap is easy to make, for the most part.

The hole should be about 12 inches deep, and perhaps ten inches across the top, with a gentle slope on the inside. You'll notice in the illustration, the hole is wider at the bottom than at the top. So, slope the hole outward as you work. I found it difficult to place the stakes into the sides of the hole without a lot work, but it can be done, just do your best to avoid poking a hand or arm as you work.

The key to making a 3 pin trap is, not only getting the heavy log up, but positioning the three pieces of wood that must hold the log. I have found this trap hard to balance, due to the sharp point on the two pieces of wood (vertical) holding the center wood with the bait (horizontal). Be sure to use a base as seen in the illustration. This type of trap can easily be knocked over by wind or if an animal brushes against it.

The trap should be placed in or very near an animal trail, so the animal can smell the bait on the stick. If it works correctly, the animal bites the bait, the heavy log falls and kills or traps the animal under it. However, there is no guarantee the log will fall on the animal and it may fall to either side. I think this type of trap is too much work and the results are questionable at best.



Catching Tools



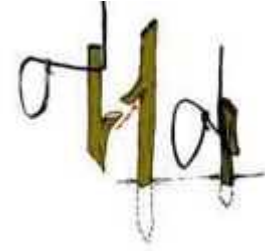
Apache Foot Trap



Catching an animal in a snare may seem cruel to some of you, but this is taught only to help you survive until you are rescued. Meat should be an important part of any survival diet and snares will help you put meat in your stomach. Simple snare can be made as shown in the illustration above. Note how the trigger is made to rest against the support in the ground. When the animal's head enters the noose, the trigger is pulled away from the rest and it usually flips up or the animal strangles.



Fix the snare so the animal has no choice but to enter the snare. Block most other routes and in many cases the animal will enter the snare. The type of snare shown above is simple, does little but retain the animal. It does not flip up but holds the animal in place. In most cases the animal will straggle as it struggles to get free.



1. You need a log base that is heavy enough a small animal like a raccoon, opossum, rabbit or squirrel cannot drag it away. Using a fallen log is a great idea. Or, it can be secured to a tree trunk or large sapling. The snare can be made of what you have on hand, but wire is the best and easiest to use. I've used the cord inside of paracord, fishing line, twine, or vines. Vines generally work poorly and use them only when you have no choice. **Arrow** points to the snare, which can be made of wire, rope, or vine snare to catch the animal by the neck.
2. Log overhead to secure the snare to.
3. Position it all on a game trail, which is indicated by animal tracks. Look for heavy traveled paths which are easy to see in the grasses. It'll look like a small hiking trail. Look at the tracks and see if you can determine what kind of animals are using the trail. Most of the time it will be rabbits but you can also eat raccoon, opossum, or other small game.



Remember, the animal may not be dead when you check the snare so be prepared to kill it to survive. Try to kill the animal quickly, to avoid it suffering, and once you start to kill it, finish the job. If you stop, the animal may not survive anyway, depending how much damage you've done. All animals will cry out at times when being killed, so if you've never killed an animal before, be mentally prepared for the sound. It may bother you and it will most people.



1. You need a log base, which is easy to find in the woods. However, not just any log will do, because you want one where you've seen squirrels or other animals.

You might find animal tracks leading to the log or find a game trail close by. Make sure you're placing it where animals move or it's a waste of your time to place the snare.

2. You'll also need a limb to hold your snare open and up, but if a limb is not on the log itself, you may have to cut one and place it beside the log. It's a good idea to place a number of snares on one log, say a half dozen or so. Don't worry if you need to place a number of limbs in position around the log.
3. A wire, rope, or vine snare to catch the animal by the neck. Wire works the best, but use what you have. Now, if the snare closes, it's very likely it will not kill the animal, so you'll have to do that job. While many of you may not like that idea, it must be done if you are to survive. You can kill the animal with a rock, club from a large limb, or your spear.



Warning: Never pick up an animal that is not dead. Even squirrels have sharp teeth and long nails that can cause serious injury. Make sure any animal is dead before you remove it from the snare. Often people will pick up a stunned animal, only to have it come to life suddenly as they are handling it.

When it comes to procuring meat in the wild, you will have to work for your next meal. Usually, it takes a lot of work and then you will most likely have to lower your meat standards a bit. You may prefer beef, but in the field, you will be lucky if you dine on squirrel or rabbit. Animals are difficult for the inexperienced hunter to catch. They are very shy of man and often their senses are highly tuned toward survival. However, you can trap most small game, if you know what you are doing.

Now, there are all kinds of traps that can be made in the bush. Some use boulders, huge logs, deep pits, and so on. Those are more work than they are worth. Well, at least they are for the average person who needs meat quickly and is not hoping for a lion, bear or other large game. We will concentrate on small game. Mainly because they are easier to trap and they are more abundant. Not to mention, they are less dangerous to catch.

The most common method of catching small game is by using snares. Snares can be made using line, cord, wire, or even vines. I can tell you from experience, it will take a lot of traps to yield one animal. Unless you get lucky and discover a place that is full of small game! I recommend you set them out by the dozens and check them first thing each morning. Try to find small game trails, which are small trails through the grass and weeds. Often, rabbits and other small game use the same trails over and over to move to food and water sources. Like man, they are creatures of habit. You may also find trails that lead into briar patches, thorn bushes and other types of brush. Small game uses those types of places as protection, or places to hide. They are good places to put a snare as well.

Snares can be purchased ready made, with a locking loop. Or, if you prefer, you can make your own from wire, string, cord or vines. I have found wire to work the best and

as you may have guessed, vines work less effectively. But, in a survival situation, if you don't have an item with you, then you must use what Mother Nature provides, or do without. I carry about 50 feet of snare wire and about 25 feet of parachute 550 cord. The parachute cord is nylon and has strands of smaller "string-like" cords inside. I simply cut the cord and remove a single strand of the smaller cord and use it to make my snares with. It is small, light, and very strong.

When making a snare there are two very common designs. One type of design simply holds the animal at ground level and may or may not strangle the victim. The second design will flip the animal into the air and hold the carcass off of the ground. Of course as the animal is held off of the ground it is strangled to death. While they are both are easy to make, each design has strengths and weaknesses.

Both designs require the loop in the wire, cord, string, or vine, to tighten and hold the animal. The loop (see the illustration) should be free moving. This free movement allows the loop to tighten as the animal struggles or moves forward into the snare. With the flip up design, movement of the wire will trigger the device and fling the animal into the air, which using the animal's body weight tightens the loop. Make sure the loop has free movement.

In both types of snares you should set the loop diameter for the type of animal you hope to catch. I am using the most common small game here, due to the fact that they are most abundant. Additionally, keep in mind that different animals require the loop diameter to be different sizes and to be placed at different heights on the game trail.

- Rabbits, the loop should be about four inches in diameter and placed about two inches above the trail.
- Squirrels, the loop should be about three inches in diameter and two to three inches above the trail.
- Beavers, make the loop about five inches in diameter and place it about one to two inches off of the ground.

For the holding snare, lets say for a rabbit, you make a loop (about four inches in diameter) and place it about two inches above the center of the game trail. Make sure the end of the snare wire, opposite the loop, is secured to a bush, stake, or other stationary object. Make sure what you use to secure the snare cannot be pulled away by the animal. Then, if needed, use brush, logs or other debris to make a funnel toward your snare. In other words, force the animal to the snare and do not allow them to go around it. Since most animals will continue to use a trail they have used daily, this should not be a big issue. But, by using the tunneling affect the game will usually continue down the known trail. The animal's head will then enter the loop and as it continues to move forward the loop will slide and become smaller. Eventually the loop will be so small is size the animal cannot get out. Any struggling will only tighten the loop. Thus, you have dinner.

In the flip up snare (see the illustrations) the principle is the same as far as tunneling the animal. The difference is when the animal's head enters the snare it will eventually pulls the wire far enough to trigger the flip up part of the trap. At that point the animal

will be flipped into the air and strangled. The diameter of the loop and the distances off the ground remain the same in this snare as in the other.

To make a trip snare, you need a flexible limb or bush, the snare wire, a trigger and a method to hold the trigger. The illustration shows a couple of examples. I do not recommend this type of snare in extreme cold because the flexible part of the trap often freezes in place and does not function as a spring any longer. If the weather is really cold use the standard holding snare.



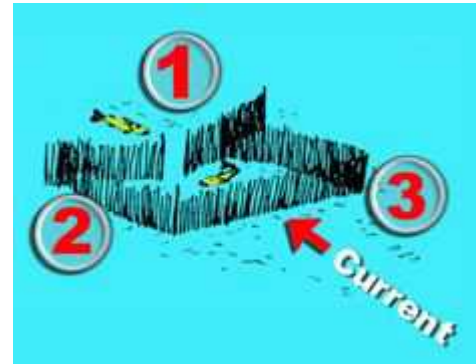
I stated early in this article to check your traps each morning. This is important to remember. Some animals, if snared by the leg, will actually chew the limb off to get out of the trap. While I have no problems snaring my dinner, I do not want to cause pain or suffering to any animal. My goal is to kill the animal so I can survive, not to inflict pain. When you approach the snare you will usually see right off if it has an animal.

If an animal is there, use a club or spear (see my article on primitive weapons) to kill it instantly (Most animals caught in a snare will be dead already, but be prepared) Or, if you are an experienced hunter, you may have a different method. The choice is yours, but keep in mind to kill quickly. Many animals, even small game, will be capable of inflicting pain on the person checking the snare. They may bite, scratch or claw you.

For some of you, snaring an animal may not be a very pleasant task. It may prove to be even more difficult to kill an animal so you can eat. In today's society we are rarely involved in the processing of our meals and it can be a shocker for some folks. I can understand your views, but in an emergency, you will need the fats and protein the animal will provide. Something must die so you may live. Survival is not a game. In a real survival situation your life may very well depend on your ability to snare game, eat insects, or even the eating of certain plants you may not like. It is necessary for your survival. Can you do what it takes to survive? Can you make a snare?

FISH TRAP IN A STREAM OR SMALL RIVER

To make a fish trap, realize it will take a long time. You should completely block the side against the current, do the sides, and leave a narrow opening, or doorway, at the down current side of the trap. The fish will enter the trap and they usually move up current once inside. Most will not be able to find the exit, so you'll have dinner! Use green limbs to construct the trap.



To catch the fish, you can make a net from a tee-shirt, sock or even weave one if needed. It may be possible, if there are more than one of you in the group, to stand close together and "drive" the fish into a corner, where you can collect them by hand. Keeping mind so fish have spines and other may have teeth, so you may want to make a fish spear, as illustrated below.



This shows how to make a very effective spear for catching fish. Use (1) green wood for the spear, (2) split it down the middle a little, and cut notches in the split end. It may be required to be reinforced where the split stops (by wrapping with wire or vines) to keep the split from growing larger. Use either a very brittle or limber piece of twig to keep the "Jaws" open as seen in figure 3. Carry a bunch of #3, twigs, in your pocket so you can catch more than one fish. It will take some getting used to using, because of the water refraction, the fish will not be located exactly where it appears to be to your eyes. You may have to aim slightly above or below the fish to spear it. It's a good tool, because in most cases it will hold the fish long enough for you to get it.

COOKING

[Food Storage](#)

[Cooking Tips](#)

[How To Cool Beer
Without A Fridge](#)

[Removing
Feathers From A
Duck](#)

[Processing Deer](#)

[Safely Eat Bugs](#)

[Nutrition](#)

[How To Make And
Use A Solar Oven](#)



FOOD STORAGE

One of the most important considerations when venturing into the wild on any trip, be it long-term camping and exploration, or just a brief day hike, is **food storage**!

Depending on where you find yourself for these trips, different processes of storage should be considered and used.! If you're in a forest that plays host to bears and other large mammalian wildlife, you'll need to take greater food storage precautions than if you're in an environment without these animals.! Here are four solid food storage practices that should help keep you safe and healthy in any outdoor situation.

- **Keep Perishable Items Fresh** If you have access to a cooler, make sure you have enough ice and a good, solid and secure top to last however long you plan on using these items.! If you run out of ice, or don't plan on bringing any, mountain springs and streams are usually cold enough to keep food temperatures low.! Just place perishable items in a waterproof bag, anchor the bag to the shoreline by rope or other secure means, and place the bag in a nice cool portion of the water.
- **Bring Dried Food** Bringing prepackaged dried foods or home-dried foods is a good way to pack plenty of meals without the additional weight of standard foods.! Dried food is much lighter generally, and still offers all the nutrition your body needs for hiking or camping trips.
- **Safe Containers** If exploring a habitat that's home to the bears, you'll definitely want to bring bear-safe containers to store any food products and trash that could lure bears to your campsite.! There are plenty of different sizes and types of bear safe containers available at camping stores or online retailers.! Do your research and figure out what type of container is suitable for your particular needs.
- **Don't Over-pack** I know many folks like to be on the safe-side when it comes to camping in particular.! While you may be out in the wilderness for days at a time, it's important to remember that whatever you lug in, you have to bring out.! This is where dried foods can certainly help.! With lightweight dried foods you can bring extra rations without sacrificing the comfort of packing light.! Don't bring unnecessary items; make sure you do a solid job of planning and thinking about exactly what you will and wont need before you pack for your trip.! Getting to a campsite after a three day hike, only to realize that you didn't need to bring that heavy cooking device because there are permanent grills, can be a real blow to the spirit.!

No matter where you plan to be exploring or for how long, practicing sustainable, good food storage practices is an essential part of staying safe.! Being prepared for the worst can often be the difference between a fun, safe trip, and a harrowing, potentially fatal disaster.! Be smart and do some research be embarking on any great journey.

COOKING TIPS

I shuddered as the thunder cracked loudly, the wind increased in force, and rain began to fall heavily. As lightning flashed a crooked path across the darkened sky my stomach growled. Wally and I were sheltered from the storm, only by our small tent. We had been fishing earlier in the day, but bad weather had forced us to hunt a hole. I knew I could go for a long time without food and a fire right now was out of the question. Oh, I could have a bag of chips, bread and peanut butter, but I really wanted a real meal. A meal cooked on the open fire. For me camping and cooking go together like ham and beans. Can't have one without the other.

When I cook I consider many different aspects. I consider the type of wood, the size of the fire, the type of food to be cooked, the cooking method (boiled, roasted, baked, etc.) as well as my eating utensils. At times the weather has to be considered, or maybe the even the time of day. It is more difficult to cook in the dark and cooking in a blazing snowstorm or heavy rain is a little more challenging for me. But, all things considered, I do love to cook out of doors.

Depending on the length of my stay I carry different foods for different trips. If the trip is only an over nighter, or for a couple of nights I use fresh products. A trip longer than a few days has me considering other vittles. I dislike canned foods because they are so heavy. Now, if you don't have to carry them very far they are fine. But, anyone who has done much backpacking knows you sweat for every pound you carry. Unneeded weight is a real killer. If you travel light, you will travel well.

In my opinion most people attempt to cook with a fire that is too big, or they cook directly on the open flame. I usually only cook on hot coals and keep my fire small. The reason for this is with a small fire it is easier to control the temperature and it uses less firewood. An open flame may be, at times, good for boiling, but most foods cooked on it will just burn. It is just too difficult to control the temperature of a flame. Coals, on the other hand, can be added or removed to control the heat. I also, at times, use a small grill that has folding legs. I merely place the grill on its legs over a bed of hot coals. My food is usually done in short order. Save the open flame cooking for marshmallows or a nice burned black hot dog.

A normal menu for me when I can carry fresh food is just like at home. I usually have steak, chicken, chops and lots of veggies. I always use the fresh stuff up first and save the dried or package stuff for later in the trip. I take a small ice chest to keep the food cool and safe. Pancake mixes, dried soups, or other items not requiring temperature control can be premixed in most cases and stored with your other dry goods. By premixed, I mean all the ingredients in it with the exception of water or milk. Milk, by the way, is best on long trips if it is powdered or the type sold that does not require refrigeration. Due to weight problems of the un-refrigerated milk and the bulkiness of the containers, I carry powdered milk in zip lock bags. Keep in mind, most of the foods you eat at home, you can eat while camping. At least you can for the first few days.

As I said earlier, there are many different ways to cook foods. Of course the type of food often determines the method used to prepare it. One meal my kids used to love to take camping was what they called a “*country TV dinner*.” Let me explain in some detail.

The night before a camping trip, I let each camper (especially a child) select what they want for dinner the next night. Lets use chicken in this example. I place a chicken leg with thigh attached, some cut-up potato wedges, sliced carrots, and maybe an onion half on a sheet of *heavy-duty* aluminum foil. Seasonings are added as individually desired. I then fold the aluminum up and over the sides of the meal, and lastly the top. I place the whole works on another piece of aluminum. This time I fold the metal carefully over the first one. I make sure the aluminum is sealed well and not torn. All the meals then go into the freezer.

The next night, at the campsite, all the kids have to do is place the dinners on a bed of hot coals, turning every few minute's. The aluminum traps the steam and the food cooks very quickly. If the meal is not cooked enough for your taste, just re-wrap it and place in back on the coals. Believe it or not, it makes a very easy and tasty meal. Best of all, *the kids love it!* Oh, before I forget, dessert can be cooked the same way. Wrap an apple, banana, or even pineapple in aluminum and add it to the coals. As far as I am concerned, heavy-duty aluminum foil is as necessary as water when I camp.

Now, lets discuss how to get the most out of a little meat. Lets say you are camping and your friends show up unexpectedly. Do you still grill that piece of round steak and just give each person a smaller share than you had planned? I suggest you modify your menu. You will get more from the meat if you add it to the stew pot. Add potatoes, carrots, and perhaps some onion and you will have a nice soup. Also, if food is scarce, as in a survival situation, you will retain more vitamins and nutrients if the meat is boiled. When meat is roasted the juices (vitamins and nutrients) just drip onto the coals and burn.

I have seen old timers bake cakes, pies, and even biscuits in a cast iron Dutch oven. I have seen cast iron skillets carried all over the state by backpackers who swear it is the only way to cook. I say go for it, if that is your choice. I prefer to carry an aluminum frying pan, a large aluminum pot, a coffee pot, and a roll of aluminum foil. Yep, aluminum cookware is my metal of choice. I like it because it is lightweight and heats up quickly. Just be very careful with the heat of your coals and the food cooked with aluminum won't burn. Additionally, I have each person carry their own mess kit.

If you are forced to do so, you can cook with much less equipment. A sharpened stick, chunk of food and a fire is all that is really needed. Nonetheless, most of us prefer a nice meal when we camp. It seems to bring out the best as far as I am concerned. Plus, I find it fun and relaxing to cook when I camp. I suggest you go to a local bookstore and discover the many different types of books out there on camping and cooking. They are filled with original ideas that can add to your camping enjoyment. After all, enjoyment is the main reason we camp. Y'all have a great camping season this year.

In deep snow you may have to make a **platform** for your fire. If you do not use a platform, the snow under and around the fire will melt and your fire will lower itself into the snow. Eventually the fire will melt enough snow to put it out. If the snow is not too deep, you may be able to dig out enough snow to build a fire, but avoid overheating as you dig the snow. You may have to remove your coat to avoid sweating, which can freeze in cold weather.



There are many different kinds of fire to cook with, but your biggest problem may be finding a container. I carry heavy-duty aluminum foil which can be used to boil with or you may be able to make a container from birch bark. You can even cook with animal skins. Just turn the skin flesh side up and mount it on a tripod, then using sticks drop hot rocks into the skin filled with water. I've even seen water boiled in a paper cup, but placing it close to the flames, but not close enough to burn.



Or, if you just want to cook meat, stick it on the end of a small branch and lean it toward the fire, after sticking the other end in the dirt or snow. Or, as shown above, use the rocks and log to position the meat near the flames. Cook on coals or near the flames, never on the flames as it will burn your food.

To make a good cooking fire, consider the need for a fire for (1) warmth and light, this is the open flame and it's needed. (2) a spot for boiling, which has some flame, but not a large fire, and a spot for (3) frying or cooking. Serious pan frying or foods that need constant attention to avoid burning will need (3) for proper cooking. It's easier to control burning coals than open flame for cooking. The arrow points to wind direction, but winds can shift and that is why the rocks are in place, to contain your fire.



Keep your main fire small, your boiling fire smaller and the frying or cooking should be done over hot coals and NOT on open flames...or your food will burn. Always have a container or something near to put the fire out if it starts to spread. It is now a good idea to make a fire when the winds are high, due to the danger of a forest fire. Never leave your fire unattended, either stay with it, or put it out if you move from camp to hunt or gather food or water. An unattended fire is very dangerous. There are many different types of fires, but we'll explain them on another page. The most important aspect of a fire is having one, even in warm weather. Besides keeping you warm a fire has deep psychological benefits and you'll feel safer with a small fire burning.

HOW TO COOL BEER WITHOUT A FRIDGE

Ever been on a backpacking or camping trip, or on a picnic in a hot place and the beer you brought is warm? Getting cool beers without a fridge or a cool box is possible provided you have access to a few natural elements and a little patience.

STEPS

- Wind and Sock Method

1. **Buy your beverages or beer in glass bottles rather than cans.** Glass bottles work best for the wind method.



2. **Place the bottle in one of your socks.** A single adult sock should fit perfectly, and even up to 1 litre/40 oz bottles will fit.

3. **Cool the beer.** Wet the beer-in-the-sock completely. Do this either in a stream, river, under tap water, with bottled water, etc.--just make sure it's completely wet! Place the beer in an open place where it will receive lots of wind (the stronger the wind, the colder the beer will become).



4. It is best to hang it - use a fence post, tree branch, wing mirror, etc., to get a flowing breeze moving around the bottle. Without a strong breeze or a good amount of wind, this method won't work particularly well on a hot day.
5. **Let the beer stand for a good 20-30 minutes to cool down.** The longer you leave it, the cooler it should become. Have a nap while you wait.

- Newspaper Method

1. **Tear the newspaper into longer thin strips.**

2. Wet the paper.



3. Wrap paper around each bottle.



4. Leave for the water to evaporate from the paper and cool the drinks.



- Water Method

If you're picnicking or camping next to water, make the most of it. This method will work for both cans and bottles. You don't need to use a sock, although the added wrapping will help to speed up the heat transfer.



- Insert the beer bottle or can into the sock, if using. Dunk the beer-in-the-sock, or bare bottle/can, into the water of a stream, lake, river, etc. Be sure to anchor the beer to something, or nestle the bottle into rocks, to avoid losing it.

- **Check after 10 minutes, as this tends to cool beer faster than the above methods.**
- **Once the time is up, remove the bottle from its windy or watery spot and peel off the wet sock.** Crack open the beer and enjoy!



- Salt and Ice Method

This method will cool your beers faster and works with cans as well as bottles, but is effective only if you have salt and ice handy. It's described in further detail in [How to Chill a Drink Quickly](#).

1. **Fill a bowl (the thicker and/or more insulated the better) with water and add ice cubes to it.** Add as much ice to the water as you can, but not so much that it prevents the entire beverage container from being submerged into the water. A 50/50 mix of ice and water is a good rule of thumb.
2. **Add table salt to the ice.** A small handful should do. Adding salt lowers the freezing temperature of the water. That means that the water can get colder than the normal freezing temperature (32F, 0C) without turning into ice.
3. **Place your drinks in the ice water solution and rapidly stir them all around for 2-5 minutes.** By stirring, you're using forced convection to speed the transfer of heat out of your drink and into the ice water solution.
4. **Dispose of the salt water responsibly.** See Warnings below.



- Burying Method

This method isn't as fast as the others but can keep bottles cool for long periods especially if it's a warm and sunny day. It's less messy if your containers are large and helps maintain their coolness if they are being moved from other cold storage.

1. **Choose a good spot.** The optimal place is in the shade, next to flowing water, like a stream or river. Next choice would be a standing body of water, pond or lake. The more moist the soil, the better.

- If there is no body of water around, and you have water to spare, you also pour water onto the ground to keep it moist.



2. **Dig a hole large enough for the container and bury it up to the cap or lid.** Leave the cap or lid exposed so it can stay clean and so that you can find it!

- Deeper is cooler.
- In some locations, it's possible to find a spot that is nearly a crevice, such that you get the benefit of depth without the digging.



<http://www.wikihow.com/Cool-Beers-Without-a-Fridge>



REMOVING FEATHERS FROM A DUCK

Duck hunting has always been a favorite of mine, but it seems I never get to do as much as I'd like. However, there have been times in my life when I was blessed with good locations to hunt and more importantly to learn the sport. As far as I am concerned getting the ducks is the easiest and most fun of the whole process. It's the preparing the duck for the dinner table that I used to find a nasty chore.

When I was attending survival school, an instructor told us that fowl can be gutted, sliced down the middle of the chest, the back broken and then placed right on hot coals, inside down. He further informed us it was not necessary to pluck the feathers first. Well, you can do that, but I can tell you from experience that the air round your dinner plate will reek with the smell of burnt feathers and for me, it killed my appetite. As a matter of fact, I've eaten just about everything from insects to bear and I just couldn't get that mallard down. The smell was just too overpowering. As a result, every duck or water fowl I prepare for cooking now has all of the feathers removed.

In a survival situation, regardless if it's the result of being lost in the woods or following a natural disaster, water fowl may be available for harvest. If you have a gun, procuring birds will be easy, but once the bird is in hand, what is the best way to get rid of the feathers?

Your first step is to remove the "grain like sack" (called the crop) in the upper chest area. This sack will look and feel as if it contains corn or small pebbles. Then, field dress the duck by cutting from the anus to the chest cavity and removing the entrails. Avoid rupturing or cutting any organs when field dressing, as it will taint the meat. I keep the liver and heart, but some folks don't.

I suspect for thousands of years the technique of plucking the feathers has been around and while it works it does take time and patience. To pluck any bird, you need to heat a container of water until it reaches the boiling point. Then dunk the bird a few times, pull it from the water and allow it to cool to the touch and start pulling feathers. Make sure you pull the feathers the direction they grow or you'll tear the skin. While it sounds easy, it's a real chore, as I've found over the years. Then you can use a burning rolled up newspaper, a burner on your stove, or a brand from your campfire to singe the small feathers from the bird. It is both laborious and messy to pluck feathers from a large number of ducks. It's a job that I totally dislike and avoid when I can.

One of the fastest ways to prepare a duck for your oven is to skin it, cut across the top part of the chest, grasp the skin and pull it downward. Avoid cutting the meat if you have to cut to gain access to the skin as you work. You should not have to use your knife between the skin and meat if you are doing this properly. Additionally, do not allow the duck to get cold or the skinning process is much more difficult to accomplish. Skinning is easiest if done while the bird is still warm.

When cooking a duck that has been skinned place two or three strips of bacon on the bird's chest prior to roasting in your oven. A skinned duck will be very dry if bacon or

some kind of fat is not used. Also, I baste a skinned duck frequently to keep the skin moist. A skinned duck is not nearly as tasty as one with the skin on, but it is the fastest way to prepare for cooking. In a survival situation, I would not use the skinning method, because I'd want the duck's skin for nutritional purposes.

As far as this old outdoorsman is concerned, the easiest and cleanest way to rid a bird of feathers is to use duck-picking wax. This wax is available for order online or you can pick it up in some sporting goods stores. The wax comes in chunks or in beads of 5 pound bags or larger. If you strain the wax after use, it can be used over and over again according to some sources, but I question the safety of doing that.

Duck-picking or plucking wax is much easier to use than paraffin and easier to remove once hardened. I can remember, years ago, using paraffin and it would come off in chunks or in small pieces and many feathers would remain on the bird. Duck-picking wax comes off in easy to peel pieces. First, remove the larger feathers by dry plucking (not using water) and then prepare your water and wax mix.

Heat the water to around 160 degrees, the wax is advertised to melt at 145 degrees, and drop a cube of wax into your container. When it melts, you want at least a quarter of an inch of wax on top of the water. Add more wax as needed. The commercial wax I bought suggests a 25% mix of wax to water. Remember, do not boil the water or you'll not get a good coating on the bird.

Dip the bird, holding it either by the head or feet, and swish around a few times to coat it evenly with the wax. The key, or so I think, is to have about half of an inch of wax on water fowl before you let it cool. Additionally, keep your water only hot enough to melt the wax, so you get a more even coating on the whole carcass. If the water is too hot, your wax coating will be too thin, especially if it's boiling, and will require numerous dunking to coat. Once the wax has hardened, pull the wax downward with an even amount of force and the wax will come right off.

Here are some suggestions I have for safe field and home handling of waterfowl:

- Do not pile your ducks on top of each other, or they'll retain the heat.
- Field dress the bird(s) as soon as possible.
- Remove the "crop" so it does not ferment and it will do so quickly in hot or warm weather.
- Avoid cutting or rupturing the gall bladder sac, next to the liver, or opening any internal organ. This can cause your meat to stink very badly.
- Clean the inside of the carcass by using a paper towel or clean cloth. Do not use leaves, grasses or other natural items like river water, pond water or snow.
- Keep your duck(s) well ventilated, and again, do not stack them on top of each other. Avoid temperatures above 40 degrees or bacterial will start to reproduce rapidly. Refrigerate as soon as possible or prepare and freeze.
- When freezing your bird, mark it with a permanent marker by type of duck, date processed, and rotate it as you use the meat. I suggest, and this is just my opinion, you cook the duck within 6 months of freezing for best flavor.

Take care and be safe in the woods and on the waters of America.

PROCESSING DEER FROM THE FIELD TO THE KITCHEN

The young boy raised the long rifle and I watched his arms tremble from the weight, as well as excitement, as he slowly squeezed the trigger. For some reason when the report of his shot echoed through the woods I was surprised at how loud it was.

Well, after about fifteen minutes I suspected that buck was as dead as he would ever get. Brandon and I slowly made our way out of the tree stand we were in and approached the deer. I had told him earlier, "If we knock a deer down, we will both walk up to him from the rear. That way if the animal hears us, he will move or try to stand up. Keep your gun ready when we approach a downed animal and be ready to shoot. Even a wounded deer can hurt a hunter at times. "

I spent some time and showed the young man how to field dress an large animal and stressed the importance of him always checking the inner organs for spots or lesions of any kind. I explained that the organs should be a nice uniform color, without any discoloration at all. I picked up the liver and explained this to him as I ran my right index finger around the organ to indicate the even dark red color of the tissue. For a boy not yet sixteen he paid close attention to the entire field dressing process.

Soon the buck was skinned, placed in a fresh game bag, and we were pulling up in the driveway at Brandon 's house. His mom was grossed out, as she is every deer season, but his father was as proud as any man could be. While Larry had wanted to go along on the hunt, he had fractured his left leg only the day before and was stuck at home.

Now, my brother Larry loves to deer hunt. He hunts every year and he does it all, bow, black powder, and rifle. I have to admit, overall he is a much better hunter than me and he always has been. He seems to have more patience than I do and I suspect his hunting senses are better tuned than mine as well. With the deer in the back yard, Larry just took over and walked Brandon through the butchering process.

"The first step is to make a long cut completely down both sides of the deer's spine, and use just the tip of the knife blade. This cut is the loin, or backstrap, and it is the best part of the deer. Brandon, keep your knife sharp or else go and get a couple more knives. A sharp knife is necessary when butchering any large game (I noticed the knives and other tools, like a hacksaw, had already been cleaned with soap and water by my sister-in-law). Now, you know how to fillet, so run your knife up from the area near the ribs toward the deer's spine. As you cut, make the cuts smooth and keep the blade even. Do this cut on both sides of the spine and remove both pieces of backstrap.

Next, raise the front leg and make a nice even cut where it joins the chest. Remember, this leg bone lies flat against the chest and is not in a socket. It is held in

place by muscle and tendons. As you cut, lift the leg until you have removed it. Ok, that was easy, now do the other side the same way.

The rear legs are held in place by the hipbone and you have to have a feel for where the joint is. If you place your hand near the hip and raise the leg, you should feel the movement in the hipbone. Make a cut down to the joint and make it smoothly. Remember to cut and not carve or saw the meat, and that's one good reason to always keep your knife sharp. You may have to lift the leg as you do this step, but it's not a big deal if you do.

Now, my grandpa used to cut his deer in half when he butchered. That was before Chronic Waste Disease (CWD) and we won't chance that now. But, if you wanted to, and you knew the deer was disease free, cutting it right down the spine makes handling much easier for you. Also that way you can work on one half of the animal at a time. Oh, and I see you looking at the glaze forming on the meat. The glaze is ok and it actually helps protect the meat from hair, dirt or other debris. It will turn a light gray color by the time we are finished. Now, I want you to trim the flank, or the meat around and over the ribs from the deer now. Place it all in that large pot, so we can wrap it for use later in soups or stews. Ok, move down to the neck and remove as much meat as you can, placing it in the same pot as the flank."

"Do you want to keep the ribs, Brandon ?" I asked a few minutes later as he worked on the neck meat, not knowing the answer since it was his first deer. "No, there doesn't seem to be much meat left on them and not much between those wide bones either."

"Good and wise decision, Brandon . Deer ribs are not like beef or pork ribs, in my opinion, just not enough meat on the ribs of most deer for me. Plus, I hate wrapping them because they are curled and harder to wrap. But, if you had wanted to keep the ribs we would have removed the bullet damaged areas (bruised meat, blood clots, or broken bone) and then cut them as square as we could for ease of wrapping. "

"Do you see how the tissue of the meat grows in almost a line up the legs? The direction of that growth is called the grain of the meat. Ok, if you cut with the lines (or grain) on the tissue the meat will be harder to chew, thus it will be tougher to eat. So, we want to make our cuts across that grain or in the case of the rear leg you have there, we will not cut lengthwise, but across the leg. Take your knife and cut a complete circle at the part of the leg where it has tapered down a lot, the remainder of the leg below your cut is called a shank. We can use that as a roast or we can use it to make stews or soups with. It is tougher eating, but still good meat.

I suggest you make a long cut now, from the bone at the top of the meaty portion of the leg down to the circle you cut around the shank. Do that on both sides. Keep your cuts as straight and even as you can. Ok, you're done?

Next, lets start cutting the meat into steaks. Make them about an inch or so thick and as you cut down, go all the way to the bone. Do that until both of the two rear legs are prepared. You may have to use your knife to cut the steaks from the thighbone, but if

you wanted to, you could simply cut the bone with a hacksaw and make a nice looking steak as well. But today we are not keeping the bone in place, so just cut the steaks loose from the bone.

Now, the two front legs we will cut into three pieces (or two circular cuts) and make pot roasts with them. I have found making roast to be an easy way to prepare the front legs without a band saw, or some other way of cutting steaks from them. Now, pick up the hacksaw and cut through the bone in both spots where you cut. Brandon, take that piece of cloth and wipe the bone dust and chips from the roasts. Keep the meat as clean and free of debris as you can at all times.

Ok, that went well. Now, pick up the loin and let's cut it into pieces that weigh about a pound to two pounds each. Keep in mind, this is the best part of the animal and it is the favorite cut of most venison eaters. Once again, remember, all of our cuts are against the grain, or width wise if you will. Put those in a different container over there, because when we wrap them they will be labeled differently (as loin) than the steaks or roasts. We don't want the meat cuts to get mixed up.

Our final step in cutting, Brandon, is to remove the fat from the flank and trimmings we collected from the neck and rib area. Since we are going to use this meat in soups and stews and it will be cooked until tender, we will not worry so much about whether or not the cut is with or against the grain. Cube the meat into small squares less than an inch thick.

Ok, you did a fine job, son. Now, we have to wrap all of this meat up into packages we can store in the freezer. I always double wrap my meat and I have found it will last at least six months in the freezer and still taste as fresh as day one! So, pull out a large piece of butcher paper, place it shiny side up, and lay the meat on there. Now, pull the sides in and overlap them, then the top and bottom, and use tape to hold them in place. Wrap it once more with another sheet of paper making sure the tape from your first wrapping is down on the solid part of second sheet. This double wrap will also assist in keeping freezer burn to a minimal level.

Now, take that permanent marker and mark what cut of meat it is, type of meat and today's date (Loin, Venison, November 28, 2004). That way we know when we look at the paper we will know what type of meat it is, the cut of meat as well as the date frozen.

The remainder of the day was spent watching Brandon wrap the meat. That night over dinner, I said, "Brandon, what you did today would have cost you over a hundred dollars if a butcher had to do it. And, you know, I don't see why more hunters don't butcher. It's not all that hard is it son?"

He looked at me and gave me a big crooked smile as he said, "It was my deer from the field to kitchen, plus I did it all! Aren't you proud of me! "Yep, Brandon, I am proud of you." And, I honestly was.

SAFELY EAT BUGS

As you may suspect, there are many ways of preparing and cooking food procured in the wild. Often, we get lucky and bag a rabbit, or perhaps a squirrel. Yep, I know all about making Apache foot snares (often used for deer) and huge figure four traps, but let's be honest here, the odds are remote that you will feed on venison or bear in a survival situation. Most game procured will be small game, unless you have a gun along. If you have a gun and lots of game in the area, then this article isn't for you. Most of us will have to settle for less for dinner.

When we enter "nature's supermarket", most of us may be lost in more ways than one. The foods we are used to seeing just aren't there. Or, at least they don't look the same way we would expect them to look. Keep in mind, many of the foods we now purchase were once, and may still be, wild in the woods. What do you know about vegetables? Do you know that certain vegetables grow under ground and some on top of the ground? Nonetheless, many folks have no idea what is edible and what isn't once they leave the house.

I suggest you do some research and find out as much about wilderness food procurement as you can. There are many good books out there and lots of great web sites on wild foods. I also recommend that you buy and carry a good survival manual, either the USAF Aircrew Survival Pamphlet or the SAS Survival Guide. Both publications have information on how to identify poisonous and non-poisonous plants. And, since it is very likely that the most common things in the bush will supply a large portion of our "wilderness diet", let's look at wilderness food sources a little closer.

If it is not winter, you may be able to rustle up a nice meal of insects. They are usually out in abundance and all we have to do is gather them up. What? You don't like the idea of eating bugs? Common sense tells us that insects are usually there, we are hungry, so, why not get together for a meal? Now, I have to admit, bugs aren't my favorite meal, but they can help keep you alive.

Insects are very rich in fat and protein, of which both are important to the survivor (click on my nutrition page to see why). While many insects may be eaten raw, most people prefer them cooked (in some cases, like ants, cooking should be done to remove poisons). I personally think the best way to cook them is to add them to a "survival stew", which is just a mix of all the various things you were able to find that day. On the larger insects, remove the wings and legs. I suggest you do this so the sharp spines on the legs don't injure your throat, or cause you to choke while swallowing.

I do not recommend the beginner bite into an insect. It is sorta like a candy filled with a special middle, but without the great taste. It is important to consider the fact that most of our aversion to the eating of insects is cultural and psychological. In many cultures insects are eaten regularly.

Insects can be found under rocks, inside of dead logs, obviously on anthills, and in nooks and crannies. Be extra careful when looking for insects, because snakes, scorpions and other biting or stinging critters like to stay in the same places. Wear gloves if you have them and use caution while shopping for dinner. Avoid placing your hands in dark hole or other places you cannot see. Make noise, and keep your eyes scanning from side to side to avoid snakes.

If you happen to see a snake, very carefully kill it with a large rock or long stick. Then carefully cut the head off (the head and fangs are still dangerous even when removed from the body), gut it lengthwise, skin it, and cut it into cubes. At that point I suggest it be added to the stew pot for the day. I usually bury a poisonous snakes head in a hole at least 12" deep. That keeps others from stepping on the head, which still contains the fangs and poison. If you are unsure if the snake is poisonous or not, then treat it at all times as if it is poisonous. And, yes, both poisonous and non-poisonous snakes can be safely eaten.

Now, back to insects. Avoid any insects that are found in animal carcasses, dung, or trash. They may carry diseases or parasites. Also, any insect you see that has a bright body color, or is hairy, try to avoid. Some may be eaten, but many are poisonous. It is easier to remember to just avoid them, than try to identify those that are safe to eat. You should be able to find plenty of worms, ants, grasshoppers, and other bugs to make a meal.

Lets look at the big three...Worms, Ants and Grasshoppers. Worms may be eaten raw or cooked. I suggest you rinse them off to avoid getting the sand or dirt grit in your teeth. Do not confuse worms with grubs, and there is a difference. Some grubs, especially those found on the underside of leaves, may contain toxins. I would suggest you avoid them. But, worms can be dried, crushed, and then added to soups. Or, just eaten raw.

Ants, on the other hand, may have a painful bite (formic acid). However, by cooking them for about six or seven minutes the toxins are destroyed. Then, they may be eaten as is, or added to soups. There is only real problem with this readily available food source, is it takes a whole lot of ants to make a meal. However, they do add protein and fat to your diet. Keep in mind; even the huge grizzly bear eats them.

Grasshoppers can be knocked from the air with a shirt, fishing net, or with a piece of cloth. Remember to remove the wings, antennae, and legs before eating them. I suggest they be placed on a flat rock near the fire and cooked. Or, if you have a pot, pan, skillet, or an empty can, roast them in the container. Once cooked, they may be added to soups or stews. Some people prefer to crush them and dry them into a powder before eating them. The method you use is up to you. Of course, some people are capable of sitting around a campfire late at night eating them raw as you might eat potato chips. I have not been able to overcome, completely anyway, my squeamishness of eating raw grasshoppers. But, if I had to eat them to survive, bring on the meal.

Whether you know it or not, you may be eating insects, or parts of insects, every day. You just aren't aware of it. Most food companies have guidelines that detail the allowable percentage of insects in their product. I am not telling you this to gross you out, but stating the facts. Does it make a difference to your body if you know about the insect you ingest or not?

When you consider the nutritional value of insects to a survivor, we would have to be complete fools not to add them to the dining menu. I will be the first to admit, they are not the most appetizing, but they do serve a purpose. That purpose is keeping you alive until you are rescued.

NUTRITION

VITAMINS, MINERALS, AND SURVIVAL

A few years ago, when I first entered the military, I had the chance to read a copy of a survival journal written by a man that was discovered dead. The rescue team had brought out all of his gear, and then turned the journal over to the Air Force. The Air Force had copied the journal and distributed it to various sections to assist in survival training. There were many lessons to be learned from the dead man's situation. The key to his death, or seemed to me anyway, was nutrition.!

Most of us know little about nutrition, because many of are not very interested in the subject to start with. Generally, we have nutritious meals (or at least they are available), we take multi-vitamins, and we (as a country) may be a bit over weight. But, what do we, as hunters, fishermen, campers, and backpackers, know about survival nutrition? I suggest we know (and may not even care) much about the subject.

The man with the journal had died in World War II, and was not discovered until sometime in the 1950's. His journal was not printed and distributed until the early 1970's. While less was known about nutrition during the writer's lifetime, there were things known that could have saved his life. However, I think, like most of us, he was neither interested nor very knowledgeable of the subject. In other words, he was typical of many outdoorsmen and women.

The dead man's aircraft had crash-landed on a frozen lake up north (Alaska perhaps). I can't remember exactly where he went down, and it is not very important where it happened, because his situation could be relived in many states or countries. The thing to keep in mind, his crash site was remote.

As I read his journal, I discovered a man with the guts and determination needed to survive. He was an experienced outdoorsman, with years of hunting behind him. He had also been trained, to a small extent, by the military. His journal showed a man of discipline, as well as a deep "will to survive." Then, you are most likely asking, why did he die?

His journal indicated that while there was no big game in the woods around the lake, it was heavily populated by rabbits. He wrote of eating rabbits regularly, and then as time passed, describing how he was losing weight. Eventually his writing stopped completely. His last entry, if I remember correctly, was of his confusion of starving to death as he ate rabbit after rabbit. I remember one old grizzled survival instructor who commented about the victim, "He starved to death on a full stomach."

The instructor went on to say that the man might have survived, he had the guts, if he had only known more about nutrition, "A rabbit is a lean critter. Not much fat on 'em and a man in a survival situation needs fat and oils. See, that man was only eating the

lean flesh of the animal. He discarded the other parts that may have kept him alive. If he had eaten the contents of the rabbit's stomach, which contains essentially green leafy grasses, (vitamins B, C, E), the rabbits eyes (which contain salt), along with the liver, heart, and kidneys (which contain vitamin A), as well as other vitamins, he might have made it. I suspect he just plain didn't know about it. Or, he didn't like the idea of eating a critter's innards. Keep in mind, in a prolong survival situation protein alone won't keep you alive”!

Over the years I have done a lot of thinking about what the man had written, reliving his fear of death, as well as what the sergeant had said. I have done a little research on nutrition and while I cannot even remotely claim to be an expert, I have found some basic facts we should all keep in mind about vitamins.

First, I suggest all of us carry a small container of good quality multivitamins in our survival kits. They are light and easy to carry. Keep them in the original bottle, because it protects them from sunlight, which can decrease their effectiveness, and it keeps them dry. But, what are the basic essential vitamins for us if we are in a survival situation and do not have vitamins along. Many professionals and “armchair” survival “experts” may disagree, but this is a group of vitamins I think we should be concerned about.

- **Vitamin A**, (retinol). We get this vitamin from milk products, animal fat, carrots, and leafy green vegetables.

Why do we need this vitamin? It helps keep your vision working well, your immune system up and working, and assists in the functioning of most major organs.

Where do you find it? From animal fats, contents of the stomach of plant eating animals, wild green plants in the field.

- **Vitamin B complex**, (B1, B2, B3, B5, and B12). All meats, green plants (vegetables), dairy products, grains and cereals (you can get them elsewhere as well, but they are not a source readily available to most survivors, i.e., brewers yeast).

Why do we need this vitamin? They are needed for the nervous system, maintaining healthy skin, the cell production process, digestive process, respiration, bone marrow production, and to assist our metabolism.

Where do you find it? Once again, by eating green leafy plants (try dandelions or banana leaf), the flesh of wild animals (including the stomach contents if the environment does not allow you to forage for fresh green veggies), pine nuts, walnuts, and perhaps even wild grains or rice.

- **Vitamin C**, is found in fresh fruits, vegetables. Remember that citrus fruits and tomatoes have high levels of vitamin C.

Why do we need this vitamin? It helps to build healthy tissues, tendons, and assists in absorbing iron. It is essential for healthy teeth and gums as well as for healing wounds or fractures (which may be experienced by survivors).

Where do you find it? If you are lucky enough to attempt survival in a jungle, then citrus fruits may not be much of a problem. One source I use in mountains or in general locations is pine needles. The needles on pine boughs can be

brewed to make a rough tasting tea. While not that tasty, it does the job of providing vitamin C as well as keeping the drinker warm.

- **Vitamin D**, can be found in eggs, dairy products, and fish with fatty flesh (tuna, salmon, sardines, oysters, and others).

Why do we need this vitamin? It assists in the building of bones and cartilage. Also, it is used to regulate the absorption of phosphorus and calcium in the body.

Where do you find it? During your searches for food look for bird nests. While the eggs you find will not belong to a chicken, they will serve the same purpose as far as vitamin D is concerned. As far as I know, all eggs are eatable and should be eaten if available. Additionally, set fish traps, make a dip net for smaller fish and try your hand at fishing. There may not be much of a problem procuring salmon if you are along streams and rivers they run on. Thousands of salmon move on our nation's waterways each year. If you catch too many of them, make a drying rack and save them for future needs.

- **Vitamin E**, is in rice and green leafy vegetables.

Why do we need this vitamin? This is one of the least understood vitamins, but it is known to assist in the prevention of muscular dystrophy. So, it seems this vitamin may be associated with muscular functioning.

Where do you find it? Look for wild rice. Surprisingly, it is out there.

Remember, rice grows in wet locations so check along the banks of small ponds or lakes. You may get lucky and find a source. Keep in mind to constantly search for sources of food and vitamins around your survival site.

- **Vitamin K**, is produced by our intestinal tract. It can also be found in egg yolks, leafy green plants, fish liver oils, and other sources.

Why do we need this vitamin? It assists in the clotting of blood. The last problem a survivor needs is the inability to clot a bleeding injury.

Where do you find it? Look for eggs as we suggested earlier, search for various green leafy plants, and it need be, build up the courage to eat the contents of an animal's stomach. The contents of the stomach can be added to soups without affecting most people very much, especially if you don't tell them or they don't ask.

Other Considerations are carbohydrates, fats, proteins, and minerals.

- **Carbohydrates** are found in a variety of food sources. They are found in sugars, honey, fruits, roots and tubers (cook these well) as well as in cereals.

Why do we need them? They are excellent sources of energy and help prevent the nausea often caused by the breakdown of body fats in the body.

Where do you find it? Look for bees (honey), wild apples, cattail roots, or even wild potatoes. Cattails will most likely be the easiest to find. **Fats** are an excellent source of energy and are found in most animal and fish. Additionally, some plants may contain fats, as well as eggs and nuts. While some "survival experts" suggest fats can be found in fungi (mushrooms) I do not recommend eating them. They are not easy to identify by most people and overall, have very little nutrition. They have the disadvantage possibly of being poison if the survivor is unsure of its identity.

Why do we need them? Fats give us our energy in a concentrated form. A key

consideration here is the availability of water. Fats take water to digest, so make sure you have sufficient water when you ingest fats.

Where do you find them? Animal fats are the easiest way. Keep in mind, wild game has less fat than farm animals. Also, during the winter months or early spring, wild animals may contain less fat. In the fall, after eating well all summer, wild game is usually the fatter.

- **Proteins** are found in meat, eggs, fish, nuts, and grains. While also found in dairy products, you are unlikely to find a cow in a survival situation.

Why do we need them? They supply amino acids, which are necessary for good health.

Where do you find them? Attempt to locate wild eggs, fish often, gather nuts and grains if possible, and eat wild meat.

- **Minerals**, minerals are need for good overall health. Some, not all, of the minerals we need are sodium, calcium, potassium, phosphorus, chlorine, magnesium, and sulfur.

Why do we need them? They all play a role in maintaining good overall health.

Where do you find them? Salt water may be boiled to produce sodium, or the eyes of the animals you kill will contain salt. Other minerals will be in the foods you eat and it should not be a problem as long as you eat a variety of foods.

While all of this information may seem overwhelming to you, you are most likely getting most of these vitamins and other things during the course of a day. We are just not aware of what is in most of our meals. Those of us who take a good quality multi-vitamin daily are getting our requirements of both vitamins and minerals.

When in the field, and forced to procure food, make sure any plants you harvest are known by you to be safe to eat. You may find almost any of the vegetables and fruits in the wild that are for purchase at your local market. Remember to wash them, but do not soak them in water (prolong soaking can reduce the vitamin content). I suggest boiling them in soups or stews to retain most of the vitamins that would otherwise be lost. While the idea of eating some of the foods survivors are at times forced to eat may be repulsive to some, what is the option?!

It has been less than 100 years since the link between foods and diseases has been identified to some degree. British biochemist Fredrick Hopkins, in 1906, proved in his studies the association between vitamins (though not called that yet) and the human body. He found a “missing link”. His research indicated that a body not only needed proteins, carbohydrates, minerals, water, and fats to develop, but it also needed what he called “accessory factors.” Further research by others has shown these “accessory factors” were in fact what we today call vitamins.!

Primitive man had no knowledge of vitamins, but his instincts were fairly good. Often, after the killing of a buffalo or large game, he would eat parts of the liver or other internal organs raw, almost immediately. I have read of explorers who did the same and they described a deep “animal like craving” for the bloody meal. Additionally, Native American ate most parts of the game they killed. Were they merely being thrifty with the game they killed or did the act serve some other unknown urge? I think this

urge to eat most of killed game was a body's need for life saving essential vitamins and minerals.

If you are ever faced with a true life and death survival situation, remember this article. Keep in mind to constantly be looking for a variety of foods, thus a variety of vitamins and minerals. Eat plenty of green leafy plants (if you can safely identify the plant), gather eggs, nuts, pine needles and other sources of food. Set out fish traps. Consider eating the parts of an animal you would not usually consider a "prime cut." Survival is not for the weak of heart. Those who do whatever is needed still have no assurance of survival. Nonetheless, the will to survive, continuous hard work, and constantly procuring sources of food can increase your chances of survival.

HOW TO MAKE AND USE A SOLAR OVEN

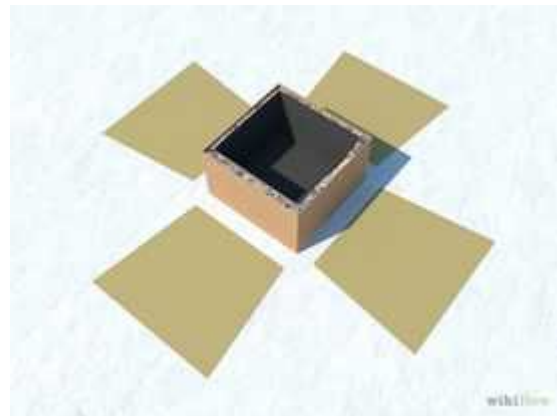
Around the world, solar ovens or "solar cookers" are increasingly used to reduce people's reliance on firewood and other fuels. Even if you have electricity, a solar oven can be an effective, energy-saving addition to your cooking tools. To make either a lightweight or a heavy-duty solar oven, follow these instructions



STEPS

- *Lightweight Solar Oven*

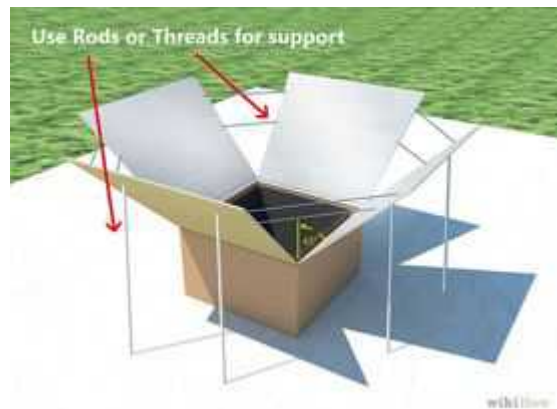
1. **Place the smaller box inside the larger box.** Make sure the smaller box is inside the large two boxes with shredded newspaper. This will act as an insulator.
2. **Line the inside of the smaller box with black construction paper.** This will keep slightly flared squares. Since you will be attaching these to the walls of your box, the width of each narrow end of each square should equal the width of the side you'll be attaching it to; the width of each flared end should be several inches wider than the width of the narrow end.
3. **Cover each piece of cardboard with reflective material.** Make sure it sits tightly around the reflector, and smooth out any wrinkles or folds. Secure the material with rubber cement or tape on one side of each reflector.



4. **Attach each reflector to the top of one side of the box.** You can glue, staple, or thread them as necessary, allowing them to flop over for now.



5. **Prop each reflector up at around a 45 degree angle.** The easiest, most secure way to do this is to connect the reflectors together at the flared top corners (ex. by piercing adjacent corners and tying them together with thread, then untying them for disassembly). However, you can also stick rods in the ground underneath the reflectors, stacking something underneath each reflector, or whatever else will hold them securely in place. If it's a windy day, make sure your reflectors won't blow over.
- If using rods, glue the reflectors to the rods to add more stability.



6. **Position the oven in full sun and cook.** Put food in the smaller box to cook it. It is best to cook the food in jars or on a small, dark baking pan. Experiment with cooking times and how and where you place the box. You may need to reposition your box several times during cooking to catch the sun



<http://www.wikihow.com/Make-and-Use-a-Solar-Oven>

FIRST AID

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EVERYONE SHOULD KNOW FIRST AID

First aid is very similar to survival: Everyone needs to know something about it.

You or a member of your party should know first aid. First-aid classes are available throughout the state. Contact your local fire department, school, or county sheriff to learn where first-aid classes are available in your area.

The two types of first-aid situations that everyone should know about are:

- 1. Immediate Care Situations**

- Minor bleeding
- Minor burns
- Sprains

- 2. Life-Threatening Situations**

- Victim who is not breathing
- Major loss of blood
- Heart attack or stroke

First aid is required in both cases. Usually, first aid is the only requirement for immediate care to ensure that the injured person will survive. However, in life-threatening situations, qualified medical attention is needed, although it might not be immediately available.

In all first-aid situations, the rule of thumb is simple: **Do no further harm to the victim!** Do what you can, but do only what you know how to do!

FIRST-AID KIT

You should have a basic first-aid kit in your survival pack. Make sure that you know what is in your first-aid kit and how to use it. Don't assume that because your friends have a first-aid kit, you don't need to carry one!

A basic first-aid kit should contain at least the following items:

- First-aid handbook
- Adhesive bandages
- Tweezers
- Sterile bandage
- Small scissors
- Adhesive tape
- Antiseptic
- Aspirin/Acetaminophen
- Safety pins
- 2-inch-square sterile gauze pads
- 2-inch-wide gauze bandage roll
- 4-inch-square sterile gauze pads
- 42-inch-square cloth for triangular bandage or sling
- Antacid
- Antibiotic salve
- Aspirin/Acetaminophen
- Assorted adhesive dressings
- Assorted butterfly dressings
- Coins for pay phone
- Cotton swabs
- Decongestant
- Eye dropper
- Hand sanitizer
- Instant chemical cold packs
- Instant chemical hot packs
- Latex gloves
- Moleskin
- Needles
- One-half percent hydrocortisone cream
- Petroleum jelly
- Roll of 1-inch adhesive tape
- Roll of 2-inch adhesive tape
- Safety pins
- Scissors
- Single-edged razor blades
- Sterile eyewash
- Thermometer
- Tweezers

You can add additional items to your first aid kit such as prescription medicines, water treatment tablets, etc. as needed. Remember to carry your first aid kit with you whenever you are in the outdoors.

BASIC TYPES OF MEDICAL EMERGENCIES

How to do CPR on an Adult

In 2010, the American Heart Association made a radical change to the recommended CPR process for victims of cardiac arrest after studies showed that compression-only CPR (no mouth-to-mouth breathing) is as effective as the traditional approach. Here's how to perform both methods of CPR on an adult.

- **Check the scene for immediate danger.** Make sure you're not putting yourself in harm's way by administering CPR to someone unconscious. Is there a fire? Is the person lying on a roadway? Do whatever is necessary to move yourself and the other person to safety.
 - If there is anything that could endanger you or the victim, see if there is something you can do to counteract it. Open a window, turn off the stove, or put out the fire if possible.
 - However, if there is nothing you can do to counteract the danger, move the victim. The best way to move the victim is by placing a blanket or coat underneath their back and dragging it.
- **Assess the victim's consciousness.** Gently tap his or her shoulder and ask "Are you OK?" in a loud, clear voice. If he or she responds, CPR is not required. Instead, undertake [basic first aid](#) and [take measures to prevent or treat shock](#), and assess whether you need to contact emergency services.
- If the victim does not respond, continue with the following steps. [Send for help.](#) The more people available for this step, the better. However, it can be done alone. Send someone to call for emergency medical services (EMS).
- To contact emergency services, call
 - **911** in North America
 - **000** in Australia
 - **112** by cell phone in the EU (including the UK)
 - **999** in the UK.

Give the dispatcher your location, and notify him or her that you're going to perform CPR. If you're alone, get off the phone and start compressions after that. If you have someone else with you, have him or her stay on the line while you do CPR on the victim.

- Do not check for a pulse. Unless you're a trained medical professional, odds are you'll spend too much valuable time looking for a pulse when you should be doing compressions.



- Check for breathing. Put your ear close to the victim's nose and mouth, and listen for slight breathing. **If the victim is coughing or breathing normally, do not perform CPR.** Doing so could cause the heart to stop beating.
- **Administering CPR**



- **Place the victim on his or her back.** Make sure he or she is lying as flat as possible - this will prevent injury while you're doing chest compressions.



- **Place the heel of one hand on the victim's breastbone, exactly between the nipples.**



- **Place your second hand on top of the first hand, palm-down.**



- **Position your body directly over your hands, so that your arms are straight and somewhat rigid.**



- **Perform 30 chest compressions.** Press down with both hands directly over the breastbone to perform a compression, which helps the heart beat. Chest compressions are more critical for correcting abnormal heart rhythms (ventricular fibrillation or pulseless ventricular tachycardia). You should press down by about 2 inches (5 cm).



Do the compressions in a relatively fast rhythm. Some agencies recommend doing compressions to the beat of the chorus of "Stayin' Alive," a 1970s disco hit, or at roughly 103 beats per minute.

- **Continuing the Process Until Help Arrives**
- **Minimize pauses in chest compression that occur when changing providers or preparing for a shock** Attempt to limit interruptions to less than 10 seconds.



- **Make sure the airway is open.** Place your hand on the victim's forehead and two fingers on their chin and tilt the head back to open the airway.

- If you suspect a neck injury, [pull the jaw forward rather than lifting the chin](#). If jaw thrust fails to open the airway, do a careful head tilt and chin lift.



- If there are no signs of life, place a breathing barrier (if available) over the victim's mouth.

- **Give two rescue breaths (optional).** The American Heart Association no longer considers rescue breaths necessary for CPR, as the chest compressions are more important. If you are trained in CPR and totally confident, give two rescue breaths after your 30 chest compressions. If you've never done CPR before, or you're trained but rusty, stick with only chest compressions.



- Keeping the airway open, take the fingers that were on the forehead and pinch the victim's nose closed. Make a seal with your mouth over the victim's mouth and breathe out for about one second. Make sure you breathe slowly, as this will make sure the air goes in the lungs and not the stomach.
 - If the breath goes in, you should see the chest slightly rise and also feel it go in. Give a second rescue breath.
 - If the breath does not go in, re-position the head and try again. If it does not go in again, the victim may be choking. [Do abdominal thrusts \(the Heimlich maneuver\)](#) to remove the obstruction.

- **Repeat the cycle of 30 chest compressions.** If you're also doing rescue breaths, keep doing a cycle of 30 chest compressions and 2 rescue breaths.
- You should do CPR for 2 minutes (5 cycles of compressions to breaths) before checking for signs of life.
- Continue CPR until someone takes over for you, emergency personnel arrive, you are too exhausted to continue, an AED is available for immediate use, or signs of life return.



TIPS

- You can get guidance on correct CPR technique from an emergency services operator if needed.
- If you must move the victim, try to disturb the body as little as possible.
- Get proper training from a qualified organization in your area. Training from an experienced instructor is the best way to be prepared in an emergency.
- Always [call Emergency Medical Services](#).
- If you are unable or unwilling to perform rescue breathing, engage in compression-only CPR with the victim. This will still aid the victim in recovering from cardiac arrest.

WARNINGS

- Remember, if some one is not in your care, you must ask permission of the responsive victim if you can help. If they are unresponsive, you have implied consent.
- Do not move the patient unless he or she is in immediate danger or are in a place that is life-threatening.
- If the person has normal breathing, coughing, or movement, do not begin chest compressions. Doing so may cause the heart to stop beating.
- If possible, wear gloves and use a breathing barrier when possible to make transmission of diseases less likely.
- Remember that CPR is different for adults, children and infants; this CPR is meant to be administered to an adult. <http://www.wikihow.com/Do-CPR-on-an-Adult>

BLEEDING VICTIM

If a person is bleeding, you must stop the bleeding as quickly as possible. You also may need to protect the wound from infection and treat the victim for shock.

There are two recommended ways to stop bleeding:

1. Direct pressure and
2. Pressure points.

DIRECT PRESSURE

Use direct pressure on all wounds. This is the first choice to stop all bleeding and stops circulation only at the wound.

Press hard directly over the wound. Use the cleanest available material to press over the wound. A shirt, socks, etc. can all work. Use your hands if no cloth is available.

If possible, elevate the wound above the heart.

PRESSURE POINT

This is not as good as direct pressure in most cases. Using a pressure point stops all circulation to that part of the body.

When using pressure points, you should first use direct pressure over the wound. Add a pressure point only after you have used direct pressure and bleeding has not stopped.

After bleeding has stopped, release the pressure point and maintain direct pressure on the wound.

OTHER INFORMATION

Do not use a tourniquet to stop bleeding!

A tourniquet is not recommended to stop bleeding. The only time a tourniquet should be used is when a limb (such as an arm or leg) must be sacrificed in order to save a person's life.

Clean small wounds with hand soap and water. Do not clean a serious wound after bleeding has stopped! Leave the bandage in place, and allow trained medical professionals to clean the wound. If you try to clean a serious wound, you could make the bleeding start again.



VICTIM IN SHOCK

Shock slows down the heart, lungs, etc. and can cause death. Symptoms include pale, cold, clammy skin; rapid pulse; shallow breathing; and fear in the victim. Anybody who has been injured can suffer from shock.

The best treatment for shock is to keep the injured person comfortable, warm, and dry. Usually, you keep the victim lying on his or her back with feet elevated.

For a shock victim with a head injury, elevate the head and shoulders instead of the feet. Also elevate the head and shoulders if the victim has difficulty breathing.

Do not elevate both head and feet. Elevate either head and shoulders or feet, but **not** both, for a victim in shock.

- "If a face is red, raise the head."
- "If a face is pale, raise the tail."
- "If a face is blue, breathe for two."



VICTIM WITH FRACTURE/SPRAIN

Make a splint for the break or fracture. Do not move a bone if it is broken. Use sticks, magazines, or splint boards to keep the break or fracture from moving.

It is sometimes difficult to tell the difference between a sprain and a fracture. Make a splint for a sprain just as you would for a fracture. Try to prevent unnecessary motion.

Do not move a victim with a serious neck or back injury. Send for qualified medical help immediately.

BURN VICTIM

Doctors use "degrees" to measure the depth of a burn.

- **First-degree burns** are on the surface of the skin. They are mild burns. Treat first-degree burns with cold water. Aspirin may help relieve pain from first-degree burns.
- **Second-degree burns** are deeper, under the skin. They blister and are more serious than first-degree burns. Treat second-degree burns by covering them **lightly** with dry, sterile bandages. Apply no pressure. Qualified medical personnel should inspect second-degree burns.
- **Third-degree burns** are the deepest and go through the skin to the flesh. **They always require medical attention.** The victim may not feel much pain due to nerve damage. Cover third-degree burns **lightly** with dry, sterile bandages, and get qualified medical help.

All victims with second- and third-degree burns should be treated for shock. Loss of body fluids will increase the danger of shock.



NON-BREATHING VICTIM

The easiest way is to tell if a victim is unconscious or not breathing is to shout at them! If the victim is unconscious or cannot breathe, the victim will not answer.

To deal with a victim who is unconscious or not breathing, remember your **ABC's**.

- **Airway**—Check that the airway passage is clear of obstructions.
- **Breathe**—If a person is not breathing, assist immediately. Once the airway passage is clear, listen and feel to see if the victim is breathing. Wait 5 seconds. If there is no breathing, breathe into the victim. This expands the victim's lungs and gives oxygen. Don't stop breathing into the victim until qualified medical help arrives!
- **Circulation**—Check to see if the victim has circulation (a heart beat). If the heart stops beating, breathing also stops. CPR (cardiopulmonary resuscitation) is required when circulation stops. CPR combines mouth-to-mouth breathing and chest compression to get the heart and lungs working together. First aid is an important skill. If you have not taken a separate first-aid course, you should plan to do so in the near future.

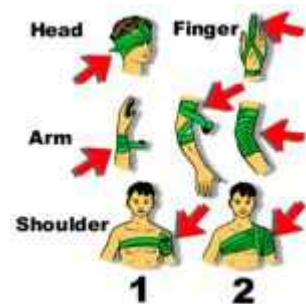
WHAT YOU LEARNED

You or someone in your party should know first aid and how to handle both immediate-care situations and life-threatening situations. In any situation, the first rule is: Do no further harm to the victim. Your survival pack should include a first-aid kit.

If a person is bleeding, you must stop the bleeding using direct pressure or pressure points.

If a person is in shock:

- Keep the victim comfortable, warm, and dry.
- Elevate either the feet or the shoulders and head, but not both.



If a person has a fracture or sprain, make a splint to keep the injured area from moving.

If a person is burned, the treatment depends on the depth of the burn. Third-degree burns require medical attention.

If a person is unconscious or not breathing, remember ABC—Airway, Breathe, and Circulation.

EMERGENCY BANDAGES AND WRAPS

This illustration gives you an idea of how to apply bandages to various parts of a body. The key here is to wrap the bandage tightly and the wrapping does not have to be pretty or perfect, just as long as it's snug and works. Bandages are easy to apply, but when tightening the bandage, don't make it so tight it cuts off the flow of blood.

Keep in mind, you must control the bleeding or your victim may die. Direct pressure and bandages usually do the job. But, the key is to apply the bandage and if needed, place the palm of your hand or using fingers (depending on the size of the injury) apply direct pressure until bleeding stops.

It is highly suggested, if you really want to improve your chances of survival, that you attend a first aid course taught by the American or Canadian Red Cross. You may also find some other training agencies in your local area. When you're alone and attempting to survive, a serious injury can kill, especially if you are untrained. The last time I checked, the Red Cross offers a whole line of different safety and first aid courses, all of which will aid you once placed in a survival situation.

Bandages and wraps are easy to make and use. You can use any clean material, so take a look at the illustration above. Use tee-shirt, blouse, or any other material you may have on hand. I suggest you carry a few large bandanas or bandages in your first aid kit for use.

Wraps are important when you want to immobilize a wound or injury to prevent additional injury. Broken bones, especially open fractures should always be wrapped to prevent additional trauma. I suggest you attempt to tie these and use these before you need them in the field.

A splint, used with broken bones, can be made from just about anything that is rigid in the area. I've seen fingers splinted with pencils and pens, sticks, and broken legs splinted with baseball bats, tree limbs, and even a telephone books.

I also suggest you attend a first aid class, become instructor certified is possible, but at least learn enough information that you're comfortable treating most common injuries. Nothing scares a patient more than having a person giving them first aid and reading a first aid book at the same time. Learn before you need to apply your skills.

Bandages and Wraps



FIRST AID TIPS

As I looked down at the young man lying on the forest floor, I could see the pain in his dark eyes. His skin color was pale, his words were a mixture of fear and anxiety, and his breathing was rapid. I quickly looked around the area and determined his injury, a possible fracture of the right leg, was the result of falling from a ledge approximately six feet above us. I knew, from the symptoms, he was suffering from shock. Shock is a condition that results when the circulation of blood is inadequate for the oxygen needs of the body's tissues. What this means in a nutshell is a lack of oxygen to cells, which may result in cell death, and eventually it could lead to the death of the casualty.

Knowing the importance of reassuring the victim, I kneeled and spoke in a firm but kind voice to him. I kept talking to him as I determined his right leg appeared to be broken. I joked with him a little as I started treating his injury. I assured him that help was on the way, asked him about his pain, and eventually got him to talking about his new child. My goals of take charge, assess, and assure, had been met. Three days later I past him in the building we worked in. He had survived.

One aspect of the outdoors most of us pay little attention to is first aid. Why? I suggest that most of us think injuries will always ***happen to you, but not me***. In psychology we call that attitude denial. It is an "it will never happen to me" attitude, and it is a very dangerous stance to have in the woods. See, all of us will sustain some type of injury eventually if we spend much time out of doors. It just happens.

Most of our injuries will be scrapes, shallow cuts, a fishhook in a thumb, or perhaps a small burn. These are easy to take care of and they usually never lead to larger problems. However, it is important to remember that the key in any emergency treatment is a two-step process (injury treatment and shock treatment).

First, you determine the extent of the injuries and ask yourself if you are qualified to treat them? Obviously, if someone is seriously injured or near death, you may be out of your level of treatment. Nonetheless, in any situation you can do some things to assist the victim until help arrives. In a remote location during a survival situation you may be all the help that will be available for some time. *No, you should never attempt any medical treatment you are not qualified to do, nor should you sit on your duff and cry the "poor me" song out over and over.*

Your first step is to assess the injury and take charge. But, keep in mind the most qualified individual should be in control. If you are the one to control the emergency, ask yourself the following questions; First, is there still a danger in the area? Look around and ask yourself, what caused the injury and is it still able to hurt someone? This is important if the injury is the result of an electrical source, wild animal, human assault, weather, or other situations. I cannot cover all possible situations, but you do not want to become the second or third victim of a mishap.

Second, is the injury life threatening? If not, it is a very simple process usually to treat the injured person. You can determine if the injury is serious by checking for breathing

and pulse. Even if the victim is conscious, be cautious. Some injuries will not show all of their symptoms until later. Treat all victims for shock, which is covered further along in this article.

When you approach a victim, check to determine if there might be neck or spinal injuries. Is the body bent at an awkward angle? Is there a loss of feeling in the spine or neck area? Is there intense pain in one or both of those areas? Do not lift or move the victim until you are able to determine the extent of injuries. If you remotely suspect a neck or spinal injury, do not move the casualty. Make them comfortable in place, if it is not life threatening to do so. At any rate, always remember your a, b, c's....Check the airway, the breathing, and the circulation (abc).

Now, I cannot cover every type of emergency you could be faced with, but I will suggest you purchase a good quality first aid book and keep it on you at all times in the bush. If you must seek medical assistance, there are still some things you can do.

In any painful or frightening situation you may encounter a victim going into shock (Just like the man in my opening paragraph). Early signs of shock are as follows:

- **Pale skin, lips may have lost color**
- **Cold, clammy skin**
- **Restlessness**
- **Weakness**
- **Increased rate of breathing or a shallow rapid pulse**
- **Anxiety**
- **Severe thirst or vomiting**
- **Confusion**

In the later stages of shock the victim may

- **Show no interest or be unresponsive**
- **May lapse into unconsciousness**
- **Have vacant or sunken eyes**

In all cases of shock you should do the following:

- **Reassure the casualty. Speak to them often and in an assuring voice.**
- Cover the individual to maintain body temperature. Remember to cover both over and under the injured person.
- If no spinal or neck injury, elevate the persons feet approximately one foot.
- Loosen all clothing. The key here is to improve blood circulation to all tissue, especially the vital organs.
- Do NOT give any food or water. Remember, there may be internal injuries and in that case food or water could cause problems.

If the casualty is unconscious and you do not suspect spine or neck injuries, you can place them in a "recovery" position until help arrives. This is done by raising the persons closest arm above the head as you prepare to roll the individual towards you. Guarding the head, rotate the entire body toward you as one unit. Place the

individuals other hand under their chin to maintain a clear airway. By doing this you will assist in keeping the head tilted slightly in the event the injured vomits.

In cases of open wounds, cuts and scrapes, make sure you clean the injured area. I usually use plain old soap and water to clean with, treat with a disinfectant, and then cover with a bandage. The key here is to clean the injured area and to cover it, to avoid infections. Small cuts and scrapes can become very serious if they become infected.

Another common day-to-day injury in the woods are burns. Most of the burns you sustain will be small burns, usually the result of picking up a hot lid to a pan, or from touching a smoldering piece of firewood. This type of burn is usually classified as a **1st degree burn** and while painful, it is a minor injury.

A 2nd degree burn is identified by redness and the formation of blisters. This type of burn is serious and can be life threatening if large areas of the body are affected. In all burns, except minor 1st degree burns seek medical treatment immediately.

The last type of burn is a **3rd degree burn** and it is by far the worse. The burned area will be charred or black in color. *Seek medical attention immediate and treat for shock!*

Just like at home, when we camp things can happen. You must know what to do and do it when the need arises. Remember to take charge, assess and assure. Be in control, evaluate the environment for other dangers, and assure your casualty that all is well. Treat the injury and then treat for shock.

By following my simple guidelines, reading about first aid, taking a course offered by the Red Cross or other organizations, you too can develop the knowledge needed to treat all types of injuries. Only the person on the scene can accurately make the difficult calls that are often made in emergencies. The whole purpose of these articles is to stimulate your thought processes and to motivate you to learn more.

FISHING

[How To Catch Trout](#)

[Steelhead Fishing](#)

[Fishing A Small Stream Or Creek](#)

[How To Fish For Bass](#)

[How To Catch A Coho Salmon](#)

[How To Catch Salmon](#)

[How To Catch A Pond Catfish](#)

[How To Catch Bluegill](#)

[How To Catch Yellow Perch](#)

[Fishing Rods And Reels](#)

[Fishing Equipment \(Tackle\)](#)

[Fishing Methods](#)

[Knots](#)

[Cleaning And Preparing Your Catch](#)

[Cooking And Recipes](#)

[Fishing Terms](#)

HOW TO CATCH TROUT

Fishing for trout can be a great way to spend quality time with your family. Fishing can be great fun for you and for your friends and family. However, it can easily be frustrating and very boring for the kids. Here's how to have a productive day of fishing for river trout and possibly some quality time with others.

STEPS

1. **Know the rules.** fishing is regulated by your state or province. You have to buy a fishing license. Most sporting goods stores sell them. Your state's wildlife management department also publishes a booklet on regulations, limits and restrictions. It is important to know and follow these--not only because it's the law, but also because a lot of time and energy is put into keeping fish populations and ecosystems as productive and balanced as possible.
2. **Get your equipment.** If you shop around, you can find rod and reel combinations starting at about twenty dollars. You will also need hooks, line and weights. Although there are cheap pieces of equipment, the more you pay, the longer the equipment will last and the better it is likely to be.
 - The rod/reel will may come per-spoiled with line, if not, you will have to buy 4 to 8 lb. test fishing line and spool the line onto the reel. Many sporting goods stores have top quality line in bulk, and can spool it for you at a very reasonable cost. You will also need #6 to #10 hooks, the "split shot" weights that are simply pinched onto the line, and a net. Reusable split shot is usually only a few cents more, and well worth it. You might wish to buy steel shot as some believe that lead weights can harm the fish and the environment.
3. **Buy the right tackle.** Light tackle is preferred for river trout. The fishing pole will have the weight range of the line printed on it. You need to buy a rod that is rated between 2 to 8lbs. Buying the rod/reel combo is usually the best and cheapest way to accomplish this. Some experienced anglers suggest that you stay away from the enclosed type fishing reel that has a button on it that you press to release line during the casting of the bait. This type of reel is prone to internal tangles, and will frustrate a new angler to the point of turning him or her away from the sport. On the other hand, closed faced reels are very easy to use. It depends also on the style of fishing that you will be doing. Closed faced reels are great for bait fishing, but are ill-suited for using spinners or other lures. On the other hand, open faced spinning reels work well for both styles.
4. **Find a river.** You need one that either naturally has trout or better yet, is stocked with trout. The Wildlife management booklet should have this information listed in it. Just pick one near you. Rivers with naturally reproducing trout populations sometimes have stricter tackle and bait restrictions, such as "artificial lures with a single hook only." These are much harder to use to catch trout.



5. **Rig up your tackle before departing.** The easiest thing to do is to tie on a barrel swivel using a simple clinch knot. Under no circumstance should an overhand knot be used. This will cause the mono filament line to cut itself. Try tying one of these knots in the line and give it a quick jerk if you would like to see how harmful this knot is.
6. **If you use bait you will usually need to attach split shot weight to the line.** This serves 2 purposes. First, it allows you to cast more effectively, and it allows you to control how fast your bait will drift, if at all. Place the weight about 2 feet below the hook and be sure to pinch the weight hard enough that the weights will not move on the line, but loose enough that you can adjust their position on the line as well. A pair of needle nose pliers works well.
7. **Get bait.** Check regulations to see what bait is permissible. Three popular trout baits are live earthworms, salmon roe, and canned corn kernels.
 - Small spinners, spoons and other lures can be used as well. If you are fishing in a small river, use lighter lures. An exception to this is small, fast moving rivers. These waters require heavier lures.
8. **Always cast slightly upstream.** This allows your bait or lure to drift with the current and appear more lifelike. A good rule of thumb for trying to catch visible fish is to go 20 - 50 feet downstream and cast upstream past the fish. This also serves two purposes. As stated earlier, you need to have a lifelike drift on your bait or lure. Also, most trout face upstream and wait for food to be washed towards them. That means that if you go downstream you are behind them and less likely to be seen. If you do spook the fish you should wait about 20 minutes before attempting to fish that spot. In smaller rivers it is also important to "rest" a hole after catching a fish. This entails waiting 15 - 20 minutes before fishing the hole again, or fishing a different spot for awhile before coming back.
9. **Check your local wether forecast.** Fish will bite in almost any condition, but you should at least attempt to remain dry. You can match your bait to the weather conditions. During a rainstorm and up to 24 hours afterwards many earthworms will be washed into the river. This is the best time to fish worms. On windy days baits like grasshoppers or crickets are effective. This is due to the fact that windy conditions cause these bugs to end up in the water.
10. **Go to the river by yourself the first time out.** When you get there, leave all of your fishing stuff in the car and go scout out the situation. Be mindful to look for other fishermen along the shoreline. Look for any nice clearings on the shoreline that are easily accessible. You'll also want to look for slow moving patches of deep water, or any area where the river goes from deep to shallow or shallow to deep. Converging currents are another good thing to look for. If it's a stocked river, there will be plenty of people fishing. In general, they are nice people, and if you stop and ask how the fish are biting or if they caught any, they will warm right up to you and are more than happy to explain to you where and how to catch fish in that particular river.
11. **Go back and get your fishing gear and head to one of the spots you should have found when you were scouting things out.**
12. **Bait your hook.** If you are using one of the worms, you need to push the hook through the end of the worm and work the length of the worm onto the hook until the worm gets to the end of the hook, then pull the tip of the hook out through the worm to expose it. Pinch off the remainder of the worm about 1 inch away

from the hook so that a small part dangles from the end. If you are using the Roe or the corn, simply push a couple of pieces onto the hook just past the barb.

13. **Cast away.** This seems simple but can be difficult.
 - Again, the direction you need to cast on a river is up-river, then you allow the bait and line to drift downriver in the current. Cast to the 11 O'clock position as you are facing the river. If you are fishing a lure you cast to the same area, but pull the tip of your rod back slowly after the lure is in the water to get it moving before you reel in.
 - Bring the rod tip behind you slowly, and press and hold the button on the reel with your thumb. Quickly bring the rod tip around to directly in front of you and release the button in the middle of the cast. Be careful not to whip the rod too hard or your bait will get thrown off the hook.
 - If using a rod without a button, use your forefinger to hold the line, then flip the bail (the little bar) up and continue to hold the line. Follow same instructions as above, by holding on until the middle and letting it fly.
14. **Let the bait drift, keeping the rod tip up and about face level.** Once the bait gets past you, the line will start to tighten up, so keep your eyes on the rod tip and where the line is going in your peripheral vision. Any small pulls on the rod tip could be the bait bouncing off rocks or it could be a trout tasting the bait. Wait for the trout to take the bait. You will know when you have a fish on by the big pull on the rod tip.
15. **Set the hook.** Do this by quickly jerking the rod tip up 1-2 ft. If you've hooked the fish, your rod will be bent over constantly. Reel in slowly and keep the rod tip above your head. If you lower the rod tip, the fish can get off the hook as it violently thrashes about in the water. Once you have the fish reeled in to shore, take your net and gently scoop it up.
16. **Decide what you will do with the fish.** Are you going to keep it or release it? Once again, you need to know the regulations on what size fish you are allowed to keep. Stocked fish are usually about 9 inches long if stocked small and are too small to fillet, but are delicious when prepared whole. There are fish stocked catchable size (12in.+) If you do not fillet the fish you will need to clean it (remove its innards) before cooking it.

Please keep only what you will eat. Stocked fish rarely survive over winter or reproduce, and compete with wild fish. It is better to keep a couple stocked fish for dinner and release all wild fish.

17. **Protect the fish.** If you do not wish to keep the fish, it is very important that you not handle the fish at all if possible. Trout, like all fish, have a protective coating of slime on them. Touching them removes the slime and will actually "burn" the fish where you touch it. Most trout survive a proper release. Wet your hands and net before handling the fish. Try to keep the fish in the water and grasp the hook at the curve, either with your fingers or forceps, and remove it from the fish gently. The idea is to pull the hook out the same way it went in. If the fish swallowed the hook, you will have to cut the line and try not to pull on it very much as you will rip the fish's insides apart and it most likely will not survive. Be VERY careful not to squeeze the fish, as this will cause internal bleeding and a very slow, painful death for the fish.

18. **Allow the trout to slip off the hook and back into the water.** Support the fish upright gently, heading it upstream, until it regains its balance and it will swim away. Do not throw or drop the fish from very high as it may burst the air bladders the fish has to maintain buoyancy underwater.

Trout fishing is a popular sport on the shores of rivers and streams. Improve your catch by keeping the following guidelines in mind.

TIPS

- Be patient, relax, and enjoy being in nature. Fishing is about more than just catching fish; it is about enjoying nature and forgetting about your stresses.
- A thing to remember about fishing in rivers is if you can see the trout, they can see you. Blue and green clothing is rumored to be harder for trout to see. Trout are also sensitive to vibrations so walk softly and avoid jumping, shouting or anything else that is noisy
- Time of day and weather conditions will affect what bait works best.
- If you get your line snagged, either on a rock or in a tree, try to get as close to it as possible without stretching your line before cutting it loose, or you can try to get it loose by pulling in multiple directions (this may or may not be successful, so in the end, if all else fails simply cut the line off).
- Don't fish the same spot for more than 20 minutes if you are getting no bites.
- Also, fly fishing is a great way to get out on the river and enjoy some time with the trout.
- Be sure to De-barb all your hooks! It makes it much easier to get the hook out of the fish or you.

WARNINGS

- If you've never been in the wild, be mindful of other animals that may be near, especially snakes. Don't worry though, as long as you stick to paths and keep an eye on the ground, you will most likely not see one as they are aware of you well in advance and will either leave or hide. But be careful of obstructions in the path when stepping over things such as logs.
- Some rivers have dams on them. You need to know where the dams are and if they are hydroelectric. These dams can start generating at anytime and will cause the river to rise drastically and cause extremely dangerous currents.
- Trout live in cold water (45°F-55°F), so if you want to get out in the river to fish, you will need protective gear or you will quickly get hypothermia.

Things You'll Need

- Rod
- Bait, lures, or flies
- Fishing line
- Fishing license (Minimum required age varies from state to state.)

- Tackle box
- Stringer – to hold fish in water

<http://www.wikihow.com/Catch-Trout>

STEELHEAD FISHING

Steelhead have been called the ultimate game fish. These elusive and challenging fish can test an angler's patience and persistence, but the reward is hooking into a fish that is famous worldwide for its line-peeling runs and spectacular, acrobatic fight.

For the Oregon angler, there's an opportunity to fish for steelhead almost every day of the year – from the frigidly cold waters of a north coast stream in January to a sun-baked desert river in central Oregon in August.

LICENSE REQUIREMENTS

In addition to a fishing license, steelhead anglers need to purchase a Combined Angling Tag (steelhead, salmon, sturgeon and Pacific halibut). Anglers also can purchase Hatchery Harvest Tags that authorize the harvest of additional hatchery fish.

WHEN AND WHERE TO FISH

There are two main runs of steelhead in Oregon, known as “summer” and “winter” runs. The type of steelhead run is determined by the season of the year the fish enter freshwater. Some river systems have both types of runs while other streams may have one or the other. Both winter and summer run fish spawn in the spring, but they each enter the river at different times and at different stages of reproductive maturity. As their name suggests, summer steelhead begin migrating to their natal streams as early as March in some streams near the coast, and as late as October/November in some rivers in eastern Oregon. They will remain in the river for several months before spawning. All steelhead returning to rivers east of the Cascade Mountains are considered summer run fish. Winter steelhead migrate into freshwater when they are closer to reproductive maturity and are generally larger than their summer-run cousins. Winter steelhead begin their migration in late fall and early winter with some fish continuing to migrate well into spring. Winter steelhead spawn shortly after entering their natal stream. Unlike the other salmonids, steelhead are not pre-determined to die after spawning and may live to spawn multiple times. After the eggs have been deposited in the spring, the fry emerge in summer and may spend the next one to three years in fresh water prior to migrating to the ocean.

The table below describes the run timing of winter and summer steelhead on some of Oregon's best steelhead fishing rivers. In addition, the ODFW weekly Recreation Report (www.dfw.state.or.us) describes the latest river and fishing conditions for dozens of steelhead rivers in Oregon.

FISHING TECHNIQUES

Anglers can choose from a variety of techniques when fishing for steelhead, but regardless of the type of gear used, there are three keys to catching a steelhead:

1. Spend time on the water. Get to know a river and hone your technique and you will land more fish than if you chase after every “hot lead.”
2. Cover water efficiently. Keep your lure or bait near the bottom and methodically fish every part of a run or pool
3. Maintain a positive attitude. Have confidence in the water you're fishing and the lure/bait you're using. This can help you stay alert for possible strikes.

EQUIPMENT

Most steelhead rods tend to be a little lighter and more sensitive than salmon rods. A good all-purpose rod might be an 8-footer rated for 8-12 pound test line with a medium heavy action. Most experienced anglers prefer a bait casting set-up over a spinning set-up.

Of course there also are specialized rods for different fishing techniques (pulling plugs, bobber/jig, fly-fishing, etc.) and if you're purchasing a rod for steelhead fishing you should consider a number of things:

- Type of fishing you'll be doing the most (drift fishing, plunking, pulling plugs, etc.)
- Size of the lure to be cast
- Type of reel (bait casting, spinning)
- Size of line (#12, #20)
- Rod length (casting on large streams, small streams with lots of brush, fishing from a boat).

Bobber and jig/bait -- A good technique for both bank and beginning steelhead anglers. A weighted jig or bait is tied below a floating bobber and drifted in the current. When the bobber dives, stops or wobbles, set the hook!

Drift fishing – The bait or lure is bounced along the bottom with the help of a significant weight. The key is to keep the bait near the bottom of the water and drifting along at the same speed as the current. Getting a natural presentation and detecting the subtle takes of steelhead make this a difficult technique to master. But its effectiveness makes it one of the most widely-used steelhead fishing techniques.

Plunking – A heavy weight holds bait or spinner-type bobber stationary in the current near the bottom of a river. This is a great technique when water levels are very high and steelhead are holding or traveling in soft waters near the bank. Good for beginners or anglers with limited mobility.

Spinners – Many anglers are familiar with the cast and retrieve method, but those that master the cast and swing presentation often have better luck with steelhead. This involves casting the spinner slightly upstream and letting it drift naturally in the current and then “swing” toward the bank.

Pulling plugs (aka hot-shotting, backtrolling) – A plug is a plastic lure designed to dive and wiggle in the current. While they are often pulled behind a boat where they

can move and wiggle in the water as the boat drifts downstream, plugs also can be cast from the bank and slowly swung in the current.

Fly fishing – A challenging but rewarding technique for targeting steelhead. Anglers use single or double-handed rods to swing flies through the current, or a nymph/indicator rig to drift a nymph near the bottom.

CLEANING, FREEZING AND COOKING STEELHEAD

Not only are steelhead challenging and hard-fighting, they are good eating too. In fact, many aficionados prefer fresh steelhead to salmon. There are many ways and hundreds of recipes to prepare fresh steelhead – baked, grilled or smoked; sweet, salty or spicy.

Cleaning and freezing your catch Your catch should be cleaned and gutted as soon as possible. After removing the guts and gills, cut the kidney membrane along the backbone and scrape away the blood using your thumbnail or a spoon. Removing the internal organs and gills promptly helps prevent bacteria and blood clots from tainting or discoloring the meat. If you don't plan to eat your fish in a day or two, you'll want to freeze it. Most freezing methods work best if you quick freeze the fish first – place uncovered fish on a sheet of aluminum foil in the freezer to freeze it as quickly as possible.

The best method for keeping fish in the freezer is to vacuum seal it, which protects the fish from freezer burn. Quick freeze the fish, then seal it in a vacuum seal bag. Vacuum sealed frozen fish should be eaten within three or four months. Another way to protect fish from freezer burn is to freeze it in a block of water. Quick freeze individual portions, place each in a zip lock freezer bag, fill with water and freeze. Finally, if you're going to be eating the fish within two weeks you can double wrap quick frozen fish tightly in plastic (squeeze out as much air as possible) and then in freezer paper.

FISHING A SMALL STREAM OR CREEK

Gasoline prices are causing many occasional sportsmen to leave their boat and motor on the trailer at home, and keep their recreational activities near where they live. Even if you don't have access to large bodies of water like rivers and lakes, you may still be able to enjoy a fun angling experience in a small, often overlooked stream or creek.



Locate a small stream or creek suitable for fishing. You will need to address several considerations in making your choice. Here are a few:

- Is the stream on public property, or do you have permission to fish there?

- How clean is the water? Streams in agricultural or industrial areas may have pollution levels that make the fish unhealthy, or, in extreme cases, poisonous. Ideally, choose streams above the elevation of nearby industry.
- Does the stream have good water flow year round? Some streams only maintain a flow during snowmelt season, or when sufficient rainfall occurs to support them.
- The species of fish you are intending to fish for. Keep in mind, small streams generally don't support large sized specimens of the fish that live in them, due to the limits imposed on this particular environment.



Gather up the things you will need for your trip. Generally, the basic items you have to have are a hook and line, and bait. For practical purposes, though, you may want to look at some refined fishing tackle for small stream fishing. These are some things to consider: Use light or ultralight fishing tackle. Small streams are often crystal clear, and you will need a very light monofilament line to keep the fish from being spooked. Very small jigs for panfish. Bait or artificial lures appropriate for the fish you are fishing for.

- Use long shank wire hooks in the smallest size suitable. You **will** get hung up on snags, and long shank wire hooks will bend, rather than breaking, so they will pull free of the snag. This will save time replacing lost hooks. Another benefit is the ease of getting a long shank hook out of a small fish's mouth.
- Appropriate accessories may include insect repellent, a creel or bucket for the catch, and in some cases, waders to keep your feet dry.

Choose your bait. Creek fish are usually truly wild fish, or natives, and will often prefer native food for bait. Worms, grubs, insect larvae, and small insects like crickets and grasshoppers are good choices. Small jigs and spinner baits may be easier to use if the species of fish you are angling for will bite them.

Dig or catch your bait, if applicable. Digging worms requires a suitable location, like a compost heap or other place with good moisture and rich soil. Catching crickets or grasshoppers will test your reflexes, speed, and eye-hand coordination, but either method will add to the self-sufficient experience if that is what you are looking for.

Load the equipment, and take to the road. Unless you are fortunate enough to have a creek nearby, you will need to load the car or truck and drive to the creek. Finding a remote area like a state or national forest can offer an experience both of good fishing and pleasant scenery. An abandoned logging road provides a path to a stream that sees few visitors.

Get away from the *beaten path*. Even small streams may experience significant fishing pressure, so heading away from civilisation can increase your chances of having a good trip, both in the amount of your catch, and the enjoyment of untrashed forest or wood. Although shallow and narrow, this pool has lots of cover for fish.

Don't judge a pool or stream by its surface. Fish any pool or eddy that has enough water to support fish. Often, a good fish can lay in the current motionless and invisible until your bait or lure gets close enough for him to attack. Fishing stump holes, bank undercuts, eddy pools, and other places that provide enough water to support fish will give you a better chance of success. Bushes overhanging the banks of this stream mean wading is needed to fish it.



Match your technique to the conditions. Small streams in heavy woods will often have brush-cover banks and lots of blown over or washed in trees over the stream bed itself. You may find the only approach to a potential *fishing hole* is to wade the stream and stand in the current while fishing your chosen spot. Underhanded casting, if using a spinning reel, or flipping, if using a cane pole, can get your bait underneath any but the lowest branches and obstructions. The speck that appears to be in the distance is the float drifting in the pool.

Fish each hole at different depths. Fish will suspend at a depth where the water conditions are most favorable, and feed in the depth where the natural food is present. Sometimes, this is on or near the surface, sometimes, it is flat on the bottom, so don't exclude any zone from your bait offering. Casting a bait to the waterfall and letting it drift back down stream is an effective presentation in this pool

Use the stream's current to present your bait. If you fish with a spinning or baitcasting rig, you can approach a pool from the downstream end, cast to the upper end, and allow the bait to drift through the water. This will offer the fish the most natural presentation of the bait, since insects and worms that fall or are washed into the stream follow a similar path. Putting a fresh *wiggler* on the hook to try again.

Change your bait if you are having little or no success. When using different artificial lures, try different colors, types, and sizes to try to establish the fish's preference. For live bait, you may try worms, insects, or insect larvae, even insects you may find on the creek's bank. There may also be hellgrammites and crayfish in the stream which you can catch to fish with. Using a float, or *bobber* to fish the desired depth.

Use a float or bobber if the current and space permits.

This makes it much easier for a less experienced fisherman to tell if a fish is biting, and also keeps the bait at a desired depth. Use the smallest float that will keep the bait off the bottom. This makes the setup more sensitive, since the float requires less force to be pulled under when the fish bites. Using a smaller sinker and hook will enable to use the smallest float possible.



Unhook your catch and string them on a stringer, put them in your creel, or simply drop them in a clean bucket with some fresh water dipped from the stream in it to keep your catch alive for as long as possible.

Load your catch and your gear up when you are finished fishing. Don't leave anything but your foot prints when you go, so the next visitor to the spot you have enjoyed will find it clean. The catch have been cleaned, and are ready for cooking

Clean your catch. This may be an incredibly painstaking process for very small creek fish, but scale, gut and remove the heads in preparation for cooking. Keep the waste parts so they can be buried or disposed of to prevent an odor problem later. The day's catch being fried up for the evening meal.

Cook your catch. Small fish can be difficult to eat because of the many tiny bones, but fresh caught fish from a clear spring-fed stream are great, fried up crisp and golden brown (so that the bones are crispy like crackers). This is the end of a great day's activities. Add some hush puppies, coleslaw, and baked beans, and you have a delicious meal to end the day.

TIPS

- Keeping the fish alive for as long as possible ensures they will be fresh when eaten.
- Match the size of your bait and tackle to the size of the fish you expect to catch.
- Check for additional regulations such as *catch and release only* and *artificial bait only*, which are fairly common in some areas.
- Learn what specific fish species inhabit streams in your area, and find out what bag limits, size limits, and restrictions apply to these.
- Catch and release is an excellent way to enjoy fishing while maintaining the natural balance of the stream.
- Remove overhead branches or other obstructions from your fishing hole only if you have permission from the landowner or jurisdictional authorities.
- Check the water conditions prior to setting out on your trip. Muddy water, particularly after a rain, can be *stained*, and make fishing more difficult.
- Stand as far as possible up stream from the eddy you are casting into so you don't scare fish.
- Look at maps, particularly topographic maps, to locate streams and creeks and suitable access points along them in your area.

WARNINGS

- Let someone know where you are going, and when you will return.
- In bear country, avoid cleaning fish until you are home or in a safe area. If camping, bury entrails far from camp.
- Some streams and creeks may contain dangerous wildlife, such as alligators and venomous snakes.
- Be aware of the possibility of flooding if there are rainstorms in your area. Some streams can rise rapidly, even if the rain is not at your location, since rainfall occurring upstream will eventually flow down to you.
- Watch for deep pools, especially if wading with hip or chest waders.

- Make sure you have appropriate licenses before going fishing. Some management areas or parks require special permits for recreational activities within their boundaries.
- Be careful walking or climbing on wet surfaces, as these can be very slippery.
- Keep in mind that going to the local store to buy your fish will likely cost you less money even in the short run.

THINGS YOU'LL NEED

- water and food
- Fishing license
- Tackle and bait
- Suitable clothing including rain suit
- Insect repellent
- Maps of your area

HOW TO FISH FOR BASS

This article will teach you how to catch that big trophy winner.

1. **Pick out the right bait.** This is crucial. Bass like noise, so try spinnerbaits and crankbaits with a good rattle. Also Bass love worms, so try worms that have salt in them. These work the best. Plastic frogs and lizards work also. Most importantly, figure out what the bass are eating where you are fishing. For example, are there a lot of shad where you fish, crawfish etc. Once you figure out what the bass are naturally feeding on, it's a matter of finding the right colors, depth and retrieve for that natural look that will trigger the bass bite.
2. **Pick out the right rod.** Go to the local outdoor shop or sportsfishingpro.com. There are lots of different styles of fishing and different equipment for different situations.
3. **Cast into an area with a little grass and many rocks.** Sunken trees or logs work well, too - bass like to hang near any structure, drop offs, sediment lines etc. Have the bait hit the rocks. Largemouth bass prefer shallower, quieter water with lots of cover. With Largemouth Bass work the banks of a pond or lake. Smallmouth bass prefer more open water, frequently with a current.
4. **If using a soft plastic such as a lizard or a worm, reel in slowly and tug at it every once in a while.** Fish like for their worms to be moving, particularly erratically so.
5. **When you have a bite, wait a second or two to make sure the fish has your lure in it's mouth, then jerk up lightly to set the hook in the fish's mouth.** Once you think you have caught a fish, reel it in.
6. **Catch and release is strongly recommended.** Bass are the most popular game fish in the U.S. Many bass fisheries contain only native fish and in some cases are over fished. Releasing your catch ensures the future of the bass population and that means more fish to catch in the future.
7. **If you do decide to keep it for dinner, the best method is to keep the fish in a live well or on a stringer until you are ready to kill it.** If that is not an option, kill the fish quickly (blunt object to the back of the head), incise the abdomen and remove the intestines (be sure to remove the kidneys that are up against the spine) then put it directly on ice. If you don't have a cooler available, a "stringer" or bucket of water will keep it somewhat cool. If you don't intend to eat the fish, return it to the water by gently holding it in the water - ensure the gills can open and close and allow water to pass through.
8. **If the bass you catch has black skin, release it immediately.** The meat is very greasy and some say it tastes like menthols. (Note: A bass with "black skin" merely means it has been in the shallows in the sun and has darkened through sun exposure. Much the same as a human getting a suntan.
9. **You might want a topwater bait if you want to catch a big bass** things you need for this, is a bug resembling topwater bait I would recommend **the Rebel bumble-bee** easy to find in Walmart.

TIPS

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- Don't get discouraged if you don't catch fish the first time. You have to know the lake. Consider getting a map for the specific lake.
 - Cast your line and bait *parallel to the shore* or treeline or brushline you are working and draw the bait back toward you in this fashion. This will give your lure/bait a *longer time in the strike zone* and will, in time, increase your strike percentages because you're extending your bait's exposure to bass for a *longer period of time*. Like many other sports, the savvy angler will *work the percentages*.
 - Pitch your bait into or near visible brush and underwater debris. Bass hang out near and under structure to wait for an ambush opportunity to feed. The more confident you become, you can even start skipping your bait off this structure to solicit a *reaction strike* from a nearby bass. That's right, bass will strike lures *when they are hungry* AND when they are, for lack of a better word, *annoyed*!
 - Just like anything else, bass fishing takes practice. The more you fish and learn the more luck you'll have on the water.
 - Check to see if you need a fishing license, fees from these licenses help ensure safe and sustainable fishing opportunities!
 - Don't depend solely on artificial lures -- a nice night crawler may also produce spectacular results.
 - Natural color baits work best -- greens, browns, watermelon red.
 - Don't ignore the creature baits and artificial worms -- many experienced bass anglers will confirm this suggestion: without fail, the largest bass ever caught have been snagged using these simple baits and techniques with a spinning reel/rod combo.
 - Scents and weights may increase your chance of catching a fish. Try a wide variety to see which one is right for the area you are fishing in.
 - Use a medium sized hook and use minnows for bait.

WARNINGS

- Think twice about eating a bass you may catch. Reservoir and retention ponds can produce some large bass, however, retention ponds collect runoff wastes and toxins from groundwater. Eating these fish *may* be hazardous to your health. Conversely, bass caught from larger lakes and rivers are your best bet for fish not as likely to be toxic with metals such as mercury and other contaminants. This is due, in large measure, to the fact that lake water is replenished to varying degrees by feeder-rivers and underground springs.
- Be sure you have a license to fish.

THINGS YOU'LL NEED

- Bait
- Rod
- Reel
- Area to fish

- Bass boat, if possible
- License

<http://www.wikihow.com/Fish-for-Bass>

HOW TO CATCH BASS ON TOPWATER LURES



There are many ways to catch Large Mouth Bass, which include using topwater lures, which make disturbances on the surface of the water to attract fish. Topwaters can be fished almost anywhere at any time, which makes it difficult to choose a single lure in a certain situation. Please read on to find out how to fish top water lures for Large Mouth Bass.

1. **Look at your collection of lures to start.** In general, topwater lures tend to work best in "the late spring, summer and fall. In hot weather, topwaters will produce on schooling bass; in dense cover, fish a buzzbait right over the heads of bass. This means that different shapes work better than others. The same goes for color. Topwater color should match in a general way that of the dominant forage in your lake, but the color should more closely match that of baitfish than bottom-dwelling creatures.
 - Therefore, a silver topwater would tend to be a better choice than a brown one.
 - However, at night, use a black topwater, since black is the color that stands out most dramatically against the night sky to a bass looking upward.
 - Chrome is an excellent choice in many reservoirs because it matches the colors of many baitfish, including alewives and shad.
 - Sometimes a bright secondary color such as red or orange adds to the productivity of the lure.
2. **Determine the depth at which you are fishing.** Topwaters are excellent baits for fishing "big, open water as well as shallow shorelines. For example, if there is a drop-off from 15 to 25 feet, a topwater will often draw strikes from bass that are suspended there, especially in clear water.
3. **Consider the structure you are fishing over.** Long, tapering points are great places to try topwaters. Move to the end of the point and cast the area where the point falls off into deep water with a big topwater such as a stick bait. In extremely clear water with little structure, a silver, white, or gold minnow lure twitching quietly on the surface will often produce explosive strikes.
4. **Choose the right bait for the body of water.** Fish topwaters quickly in rivers and around "extremely heavy cover. A buzzbait is ideal for these situations. The idea is to fish the lure "fast over the heads of bass, provoking a reaction strike. In a river, bass may not enter the current to strike.

TIPS

- Try to spot sunken logs or trees, along with rocks. Fish will often come out of their elusive hiding spots for a tantalizing topwater.
- Make sure you have the right tackle for the place you are fishing and the type of topwater.
- Try different lures if one isn't producing. The fish have to hit on something, so keep trying until you find the right one.
- Remember to start at the northeastern side of the lake. This area should produce well, as it is home to the most life.

THINGS YOU'LL NEED

- Fishing Rod and Reel
- Selection of topwater lures
- Boat
- Fish locator (optional)

<http://www.wikihow.com/Catch-Bass-on-Topwater-Lures>

HOW TO CATCH A COHO SALMON

Fishing in the Northwest may be intimidating with nothing but big rivers, and monstrous lakes all around you, but in the right season, head towards small creeks for both Salmon and Steel head.

STEPS

- **Have correct gear.** A medium to heavy action rod with a spinning reel or bait cast reel is ideal. 10-20 pound line should do the trick. (Fly-Fishing outfit is very productive also, but requires lots of practice!)
- **Be in the right area:** Look online to find the time the fish run, and look up a popular area. Go there, and learn from the people there. Some people may not want to share info., but most would be happy to share their knowledge on areas, times, gear, and techniques.
- **Be there at the right time.** Both time in the year, and the time you go in the day. You can find a lot of info. On line about the time of the run. Traditionally, the rule is that fishing is better in the morning, but it is good all day. Usually for Salmon, the only reason to get up early is to get a spot. But if you show up late, and are forced to fish in a hole that is not the best, don't give up on it. Fish every angle of it, and wait at least an hour. A group of fish can move through at any time.
- **Know your regulations.** You need to know your regulations like the back of your hand. The consequences are very severe for poaching, even if you don't know you did anything wrong. Ignorance is not an excuse. You must be aware of bag limits, legal measurements, type of lure/bait allowed in an area, if it is even legal to fish in that area, and of course what the dates the season opens and closes too. Sometimes signs are posted on trees in popular fishing areas showing local regulations. Remember, not all regulations are the same for every stream! Most have much different laws!
- **Have Fun!** People sometimes forget that fishing isn't always about catching fish. It's about being outdoors, and if you catch something, that just adds to the experience.



Tips

- Try lures such as corky's, spinners, spoons, yarn, salmon eggs, and sand-shrimp.
- Try to spot fish in the hole. If you can see fish, or if fish are jumping, then you know that there are fish in this spot. Also, try to cast your lure just above the silhouette and let it drift to the fish.

Warnings

- Know your local regulations. Fishing is supposed to be fun, and there is nothing fun about a huge fine.
- Don't snag. This is an illegal method in all states for Salmon and Steel head. Snagging is hooking the fish in an area other than the mouth intentionally. If you accidentally snag a fish, let it go immediately. This is the one offense law enforcement officers look for most, because it is so common.

Things You'll Need

- Stiff fishing pole,
- strong reel,
- tough line,
- a lot of lead(spilt-shot or hollow lead weights work the best), and
- enough lures to last the day, because odds are you'll lose some.

<http://www.wikihow.com/Catch-a-Coho-Salmon>

HOW TO CATCH SALMON

Salmon is a popular fish due to its versatile taste and nutritional value. Salmon's speed and migratory patterns make it a favorite for fishermen. Catching salmon takes patience, the right gear and knowledge of the salmon's habits. Here are a few tips on how to catch salmon.

- **Troll instead of anchor.**

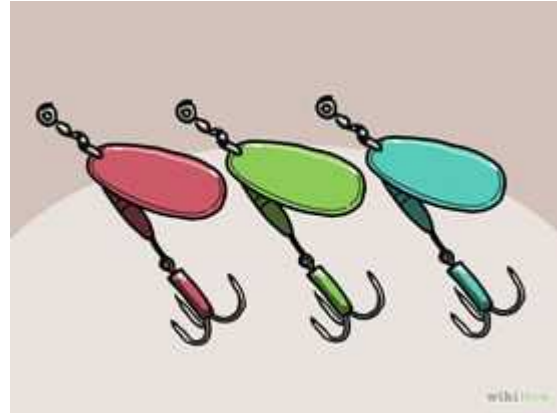
- Trolling means periodically moving your boat up and downstream and passing back over areas you've previously fished instead of anchoring in one spot. This is beneficial in catching salmon, because salmon tend to move with the current of the river or stream instead of staying stationary. You can travel back to areas you've previously tried and match the salmon's movements.
- **Follow migration routes.** Salmon migrate upstream to spawn every year, so you'll have better luck fishing for salmon if you follow the patterns of migration and chase the fish upstream. Your local natural resources or fish and wildlife office tracks salmon migration and regularly posts these numbers on line. Use this information as a guide or ask a local fishing veteran which way the salmon run.



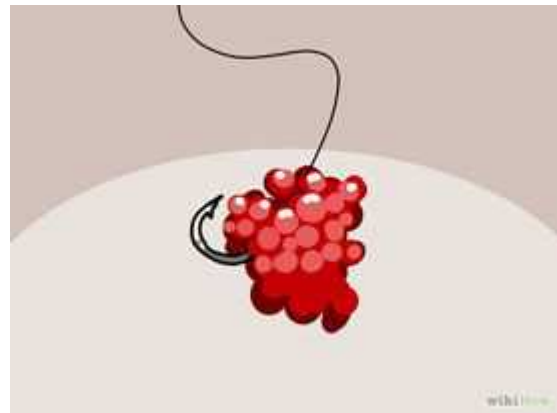
- **Fish in holding areas.** Holding areas are spots along the migration route where salmon slow down or stop before continuing upstream. These areas are ideal to fish for salmon, because the fish will be plentiful and they will all be focused on eating instead of migrating.



- **Use brightly colored lures.** Salmon are attracted to bright colors, so use lures and bobbers that will catch the attention of the fish and make them want to bite. Master anglers recommend red, blue, fluorescent pink and fluorescent orange as colors that will most often attract salmon.



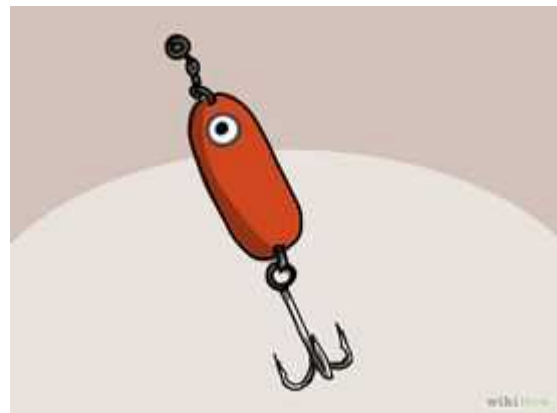
- **Bait and scent your lures.** Adding bait or scent markers to your lures will make them more enticing to salmon. Sardines, sand shrimp and salmon roe are popular baits that have been known to draw salmon.



Adult salmon can be up to 5 feet long and weigh up to 75 pounds, so use a strong, heavy fishing line to ensure it doesn't snap when you've hooked a fish.

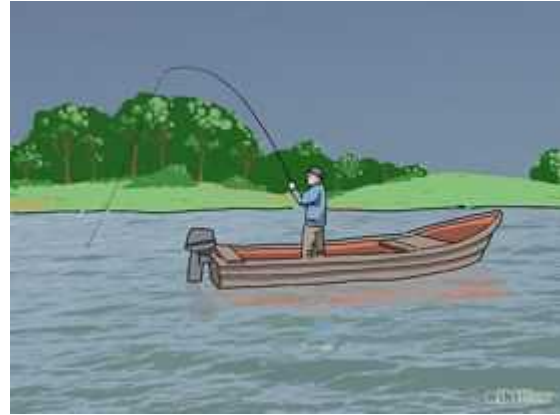


- **Weigh your line.** Salmon swimming or lounging in holding areas tend to stay toward the bottom of the river or stream. Use a weight on your lure or bobber to hold your line down toward the bottom of the water and make it more visible to the salmon.



- **Expert anglers recommend fishing for salmon early in the morning or in late dusk or evening hours.** You can catch salmon at any time of day, but salmon are generally more active during these times.

<http://www.wikihow.com/Catch-Salmon>



HOW TO CATCH A POND CATFISH

Pond catfishing is a fun activity. Most people don't think about fishing for catfish in ponds. You can catch large catfish in many ponds.

STEPS

1. **Bait your line.** Use anything that is stinky E.G. Prawns, Catfish will always go after live bait much faster than any other. The more it smells the better. Try using earthworms, chicken guts, shad and other fish to catch pond catfish.
2. **Find a spot to drop your line that is close to the shore.** Sit right on the shore and get your line out as far as you can. Use a tightline. This is where you attach a tiny weight to your line to get it down to the bottom. Keep the line extra tight so you can feel when a fish bites.
3. **Put your bait on the bottom of the pond.** In ponds, catfish will be more likely to stay very close to the deeper parts of the pond. You need to get your bait as close to the bottom as you possibly can. If putting your line down deep doesn't work, try to place your line in other cool dark places. These places may be in or around:
 - dams
 - a pile of rocks
 - a beaver dam
 - tree stumps
 - logs
 - Under algae and other vegetation. You can almost always find catfish hiding out underneath.
 - If there is a creek that feeds water into the pond, that is also a good place to look for catfish. Drop your line in the area of the pond right where that creek comes in. This is a good place for catfish to feed, so they'll be looking for food.
4. **Fish at night.** Night time is the best time to find catfish in a pond, but you can find them any time of day, depending on where you are.
5. **Catfish like to stay in cool areas**, so the hotter it is the deeper they go.
6. **The most common catfish in North America is the channel catfish.** You can improve your catch of this fish by following these guidelines.

TIPS

- Wherever it is dark and cool, that is where catfish are most likely to be.
- Catfish in ponds are usually smaller than others, but sometimes they can be huge. Expect anything.
- Use a spinning reel. Fly fishing is a hard way to catch a catfish.

<http://www.wikihow.com/Catch-a-Pond-Catfish>

HOW TO CATCH BLUEGILL

Bluegill, a small panfish also called "bream", are a plentiful, and often easy to catch fish. Although they seldom get over one pound in weight, when caught in deep water, they have a lot of fight for their size.

STEPS

1. **Choose a cane pole or light-weight rod & reel, 2-6 pound test line, and a small, barbed hook (sizes #6, 8, or 10) with a bobber (for fishing for shallow or suspended fish) attached 12-18 inches from the hook, with a small split-shot sinker attached 8-10 inches from the hook.**
2. **Use live bait (Panfish worms, Wax worms, night crawlers, baby crawfish 1-2in, small minnows 1in).** Crickets are a great bait and very cheap at the local bait shop. Or try fresh bread. These fish love bread! Just mash it around the hook into a hard ball. You'll lose a few, but it's easy and fairly cheap. A good way to keep stale bread on the hook is to make a peanut-butter sandwich on 1 piece of bread, fold it in half, and tear off little pieces, mashing it onto and concealing the hook.
3. **Wake up early in the morning.** You should already be out on the boat at sunrise.
4. **Watch your line or bobber for any movement.** These fish can be very gentle biters at times, especially in cool weather, and with a nibble or two, your bait will be gone if you are not paying attention.
5. **Set your hook gently.** The fish you expect on the other end of the line has a small, tender mouth, and jerking the line too hard will snatch the hook from the fish's mouth.
6. **If you prefer, use a small lure or even a fly.** Small, black or dark-colored ones work well. Bottom fishing (using several heavy sinkers close to the hook), drift fishing (for running water), or fly fishing are some options.
7. **Small spinnerbaits like Beetlespins or Mimic Minnows will also catch bluegill,** and by trolling these or drifting while you cast, you will cover a larger area in a shorter time, hopefully discovering a "honey hole", or a location where these fish congregate in numbers.

TIPS

- If you are looking for a big fish you might want to use the guts for bait too.
- If you are looking for a bass or a catfish you want to use the baby bluegill for bait, where they are legal.
- Fishing is best in the daylight, when they're most prone to feed.
- In cooler seasons, larger bluegill stay near or in the shallows, and spawn there as well.

- In some areas, it is legal to bait (chum) bluegills and other panfish or non-sport fish. This can be done either from shore or a boat, by throwing out rabbit feed pellets, cottonseed meal cakes, or chicken laying mash. Doing this at a regular fishing hole frequently over a period of days or weeks will almost guarantee you successful fishing.
- In late summer and early fall, they move out to deeper, cooler water. They often swim in schools.
- One of the best baits for a bluegill is red worms. In some locations, meal worms, golden meal worms, catalpa worms, crickets, and even maggots are effective. You can use caterpillar too.
- If you are looking for small bluegills you want to fish by the shore near some kind of structure or cover where the small fish can hide from predators.
- The aquatic insects bluegill eat prefer clearer water with abundant underwater plants.
- Sometimes they will snap at an empty hook.

WARNINGS

- These fish have many small bones. Use caution if you eat them!
- Also be careful when getting a large bluegill out of the water, as their sharp dorsal spines can cut your hands.
- Be careful when dealing with hooks: they can get stuck in your hands.
- Do not keep the scales on the fish or the head, because your gum might get cut and you can get sick by eating the eyes on the head.

THINGS YOU'LL NEED

- Fishing pole
- A bobber or cork, or other float
- Bait
- Net
- Hooks
- Lures
- Weights (sinker)
- Knife
- A basket or stringer
- First aid kit (optional but recommended)
- A place to go fishing you can find bluegill almost anywhere

<http://www.wikihow.com/Catch-Bluegill>

HOW TO CATCH YELLOW PERCH

Yellow Perch is a freshwater fish found in the United States and Canada. The yellow perch, commonly referred to as perch, has a body of a light yellow color with black vertical stripes. The fish ranges in size from 4 to 15 inches (10.6 to 38.1 cm) with shorter fish being less common. Yellow perch generally tops off at 4 lbs (1.8 kg). Yellow fish are edible and often sought after by fishermen for sport and food.

STEPS

Find the right location you intend to fish. Yellow perch are common in places such as the Mississippi River, Missouri, the Great Lakes, Iowa, British Columbia, Quebec, Pittsburg, Nova Scotia and other northern waters in North America. Yellow perch live in lakes, ponds and streams. They thrive in bodies of waters full of plant vegetation.

Work around their schedule. Yellow perch are active and can be caught year round. Most of the time yellow perch will be found near the bottom of deep waters. In the summertime you will find yellow perch in more shallow waters. Perch can also be found eating in shallow waters around sunrise and sunset. **Choose your bait.**

Commonly minnows are used to catch yellow perch. Use either a 4 or 6 hook with the bait anchored near to the bottom. Further attract perch to the bait by adding shiny spinners or beads. **Use your sonar.** When in deeper waters yellow perch commonly travel in schools and hide in the dense vegetation or mud. Use the boat's sonar to locate the schools of yellow perch, then choose a jig that resembles the vegetation or mud in which they are hiding.

- Maggots with weights forcing them to sink to the bottom should be used when the schools are feeding on insects and plankton.
- Bobbers should be added to the line when perch are schooling in plant vegetation. This will help keep your bait still and prevent the perch from stealing it off the hook.

Try various techniques. Just as your bait should be adjusted to attract perch according to their current feeding location, you will also need to adjust your technique to continuously catch yellow perch.

- Allow the bait to hit the bottom before wheeling back in.
- If you have hit in one spot and then the bites have quieted, cast in a circle around the boat.
- Run the boat motor, perch are attracted by the noise and vibration.
- Hit the rod against the bottom, then move the rod in quick little flicks to make the bait vibrate.
-

TIPS

- When you have a catch, quickly unhook the perch and re-bait. Since perch travel in schools they are often caught one after another.

Things You'll Need

- Equipped fishing rod
- Bait
- Boat
- Sonar

<http://www.wikihow.com/Catch-Yellow-Perch>

FISHING RODS AND REELS

Spinning Spinning rods and reels are very popular because they're easy to use, allow long casts with light lures, and can be quite inexpensive. The first two or three line guides on a spinning rod are large, because the line "billows" off the end of the reel spool during the cast. To cast with a spinning reel, you open the wire "bail" that wraps line around the spool, holding the line with your index finger. Release the line as you move the rod forward and with a little practice you're casting like a champ. Nylon monofilament line of 6- to 12-pound test works best on most spinning reels.



Spin-casting: Like a spinning reel, the spin-casting reel has a stationary spool, with line leaving and returning at one end of that spool. But the spool on the spin-casting reel is enclosed, so you can't see it. The line is released by use of a thumb-button at the back of the reel.

Spin Casting



Bait-casting: These reels differ greatly from both spinning and spin-cast reels because the spool sits perpendicular (cross-ways) to the rod rather than parallel to it. Because the spool moves during casting and retrieving, these reels are often called revolving-spool reels. Bait-casting tackle requires more practice, patience and skill than both spinning and spin-casting tackle, but once mastered, allows for pin-point casting accuracy and excellent line control when fishing and playing fish.

Bait Casting



Fly-casting: As mentioned earlier, artificial flies are very light, making them virtually impossible to cast with most rods and reels. So fly casters use a special kind of line and a certain kind of rod that allow even the smallest of flies to be cast long distances. The line itself provides the casting weight, and the rod's size and flexibility are matched to the line's weight for best casting results. Fly-fishing line is thicker and more visible than other types of fishing line, so fly anglers use several feet of monofilament or other low-visibility material as a "leader" between the fly and the fly line.

Fly Casting



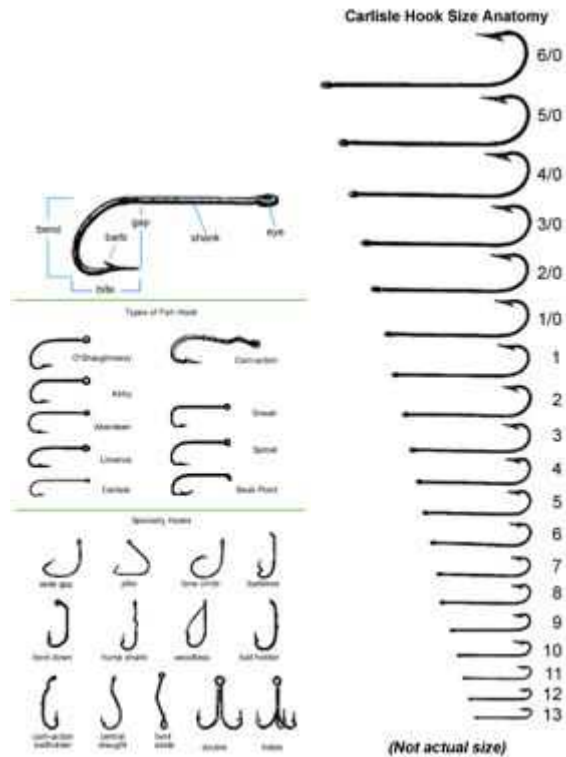
FISHING EQUIPMENT (TACKLE)

Terminal (at-the-end-of-your-line) gear

- Hooks
- Lures
- Bait
- Floats or bobbers
- Sinkers
- Snap swivels

Hooks:

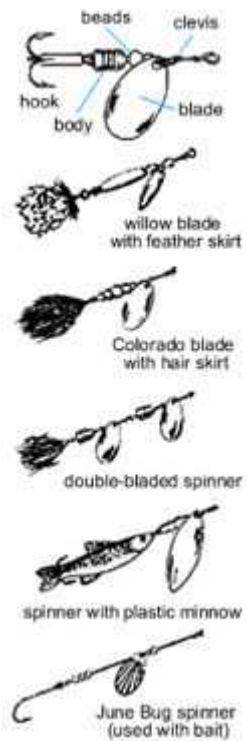
Fish hooks come in a wide range of sizes and styles, depending on the type of fishing and the size and species of fish you're after. Hooks consist of an “eye” or closed loop to attach the fishing line; a “shank” or horizontal extension; a “bend” that curves the shank down to the point; and a “barb” near the hook point to keep fish from sliding off once hooked. Most hooks have one point, but there are also double (two-pointed) and treble (three-pointed) hooks. Some hooks are incorporated into specific lures; others are attached below lures or bait.



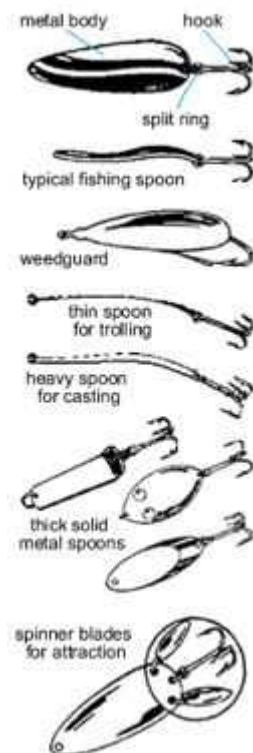
LURES:

Fish need to be lured to the hook with something that imitates their food or triggers their territorial behavior or provokes their curiosity. Lures types include:

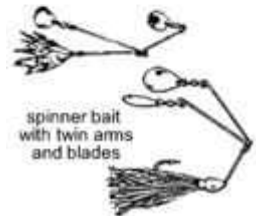
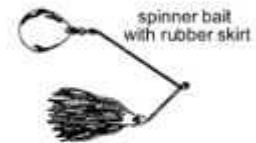
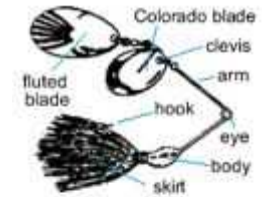
- **Spinners** are pieces of metal or plastic, attached to the line directly above the hook, designed to spin in the water to attract fish.



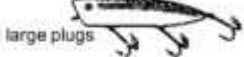
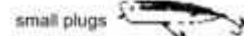
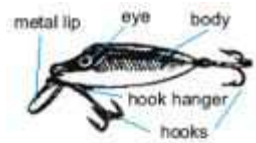
- **Spoons** are similar to spinners, but usually bigger, heavier, and designed to move differently (wobble, wave, etc.) to attract fish.



- **Spinner baits** are combinations of spinners and artificial baits that camouflage the hook, attached opposite each other on a V-shaped base.



- **Plugs** are three-dimensional simulations of bait fish, often equipped with multiple hooks with multiple points.



- **Jigs** are lead-weighted hooks camouflaged in artificial baits designed for the up-and-down motion of jigging.

- **Soft plastic lures** simulate worms, grubs, fish, frogs and other natural fish food.
- **Artificial flies:** Artificial flies are items such as fur, feathers, thread, tinsel or other materials tied around a hook to resemble an insect, a grub, a minnow or some other small morsel that a fish might eat. They are sometimes put together at the fishing site, once the fish's local food source is determined.

BAIT:

Anything that attracts fish by scent or flavor is considered bait, whether it's a live worm, fish eggs, chicken livers, or an artificial device dipped in fish-attracting scent.

- *Live fish are not allowed as bait in Washington sport fishing.*

FLOATS OR BOBBERS:

Pieces of plastic, cork, or other material that floats are attached to fishing line above the lure and hook to suspend them in the water so they attract fish near the surface.

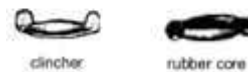
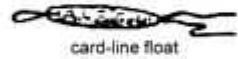
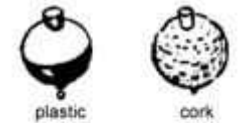


SINKERS:

Pieces of metal, rubber, or other material that readily sinks are attached to the fishing line above the lure and hook to take them down into the water or to the bottom, to attract fish that feed in deeper water.

SNAP SWIVELS:

These are locking clips that can be tied to the fishing line so lures can be attached and easily interchanged.



FISHING METHODS

Still-fishing Still-fishing simply means baiting a fishing hook, putting it in the water and waiting for a fish to find it. This method can be used from a boat, a dock, or from shore. Depending on water depth and what you're trying to catch, you may want to still-fish near the surface, at a mid-water depth, or right down on the bottom. Using a float, or bobber, makes it easy to fish near the surface; adding sinkers to your line to fish deeper.

Casting Casting your bait with a fishing rod and reel can be used both to catch fish that chase their food or to fish in a particular spot where fish hang out, such as next to a submerged stump or under a tree that's leaning out over the water. Casting is usually done with an artificial lure, to coax fish into striking. Lures such as spinners, wobbling spoons, plugs and spinnerbaits are commonly used for casting.

Trolling Trolling is simply dragging a lure, bait, or a bait-and-lure combination through the water, using a boat rather than casting and retrieving to provide movement. Many of the lures used for casting also work for trolling.

Jigging Jigging means moving your bait in an up-and-down motion underwater. Lifting and lowering the rod is what provides the jigging motion. Leadheads are the most common kind of jigging lure or "jig", but for some fish species, especially saltwater salmon and bottomfish, the jig might be a long, thin, slab of lead or other metal in the shape of a herring or other baitfish.

Fly fishing Casting small, very light-weight artificial flies that simulate insects and other fish food requires weighted fishing line from very flexible rods and hand-controlled reels. The casting is different from other kinds of fishing because the weighted line is usually extended through a series of both forward and backward casting motions.

KNOTS

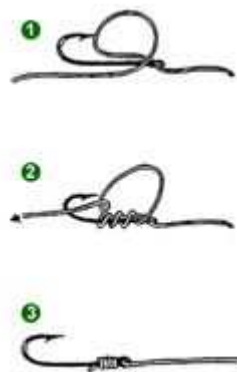
If you go fishing, you're going to tie knots. A simple overhand ("granny") knot won't work for tying line to hooks, lures and swivels, for connecting two lines, or attaching line to your reel. A hook snell, Palomar knot or improved clinch knot are used to tie monofilament line to a hook, lure, swivel or other terminal tackle. A blood knot joins two similar-size lines. The surgeon's loop makes a loop at line's end. An arbor knot is used to tie line to a reel spool. A nail knot splices backing or leader to a fly line. See the following illustrations and directions for tying these knots and practice before you go fishing.

POPULAR FISHING KNOTS

- [Hook Snell](#)
- [Blood Knot](#)
- [Palomar Knot](#)
- [Improved Clinch Knot](#)
- [Nail Knot](#)
- [Surgeon's Loop](#)
- [Arbor Knot](#)

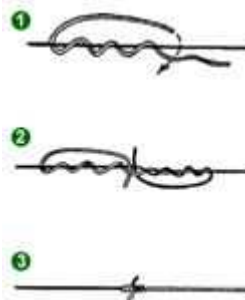
HOOK SNELL

A strong knot for tying line to a bait hook. Insert one end of leader material through eye of hook just past turn and barb. Pass other end through eye in opposite direction leaving large loop. Hold both lines along shank. Use line hanging from eye to wind tight coils from eye toward hook, 5 to 10 turns. Move fingers to hole coils in place. Pull leader extending from eye until entire loop has passed under coils. With coils snugged up neatly, use pliers to pull tag end, clinching up snout. Clip tag end and the loop knot in end of leader.



BLOOD KNOT

Used to join two similar-size lines. Overlap ends of the two lines for about 6 inches. Take tag end of one line and make 6 turns around the two lines. Take tag end and insert between tag end of other line and standing end of the line being manipulated. Hold on to tag end and repeat procedure for other line. Pull each tag end to begin to tighten knot. Moisten knot. Tighten completely and clip tag ends.



PALOMAR KNOT

Excellent for tying monofilament line to a hook, lure or terminal tackle. Double about 4 inches of line and pass loop through the eye. Let hook hang loose and the overhand knot in doubled line. Pull loop of the line far enough to pass over hook, swivel or lure. Pull tag end and standing line to tighten. Moisten before fully tightening. Clip tag end.

IMPROVED CLINCH KNOT

Used to tie monofilament line to a swivel, lure or other terminal tackle. Pass line through eye of hook, swivel, or lure. Double back and make five turns around the standing line. Thread line through first loop above the eye. then through big loop as shown. Hold tag end standing line while coils are pulled up. Moisten and slide tight against eye. Clip tag end.

NAIL KNOT

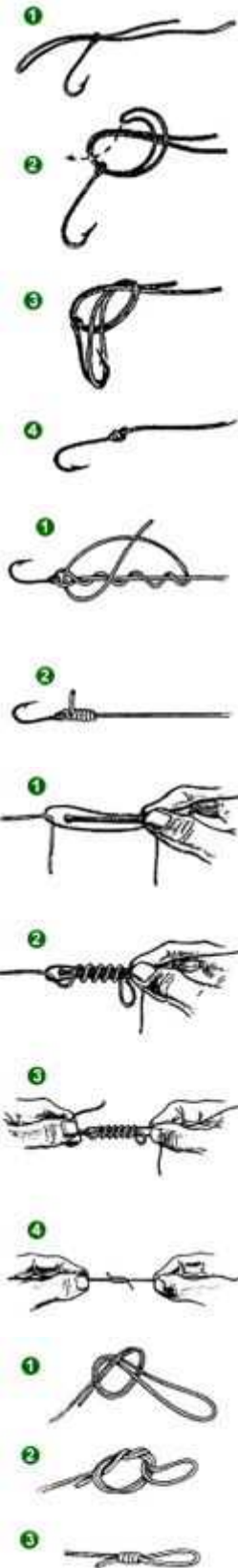
Used to splice backing of leader to a fly line. A small plastic or metal tube works as well as a nail. Pull at least six inches of fly line and lay the tube against it. Then fold the line back around the tube or nail. Take the end of the backing or leader and place it through the loop formed in the fly line. Hold the line between your thumb and forefinger. Take the protruding end of the backing and wrap it loosely five to seven times back toward your thumb. Holding these coils so they won't overlap, bring the end of the backing and push it through the loose ends. Holding the coils, carefully pull out the tube or nail, pulling the backing out as much as possible at the same time. With the tube pulled out, the coils will appear soft, but don't let go of them. Pull from both ends to gather the coils. Adjust the coils as necessary and then pull hard on both ends to make the coils bite into the line. Tighten the knot and clip off the excess.

SURGEON'S LOOP

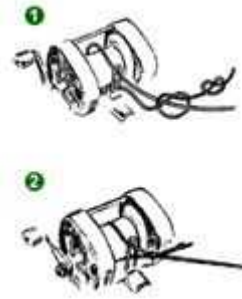
Used to make a loop at line's end. Double end of line to form a loop and tie overhand knot at base of double line. Leave loop open in knot and bring doubled line through one more. Hold standing end and tag end and pull loop to tighten knot.

ARBOR KNOT

Used to tie line to a reel spool. Thread line through line guide, around spool, and out through the guide. Tie overhand knot over standing line in end of tag end. Tightened both knots. Pull on standing end until knot passes through line guide and snugs up around spool. Thread line through line guide, around spool, and



out through the gude. Tie overhand knot over standing line in end of tag end. Tightened both knots. Pull on standing end until knot passes through line guide and snugs up around spool.



CLEANING AND PREPARING YOUR CATCH

HOW TO CLEAN A TROUT

- Supplies

Items you'll need for killing, cleaning and transporting your fish include:

- a mallet,
- sharp fillet knife,
- hook remover,
- serrated knife,
- cutting board,
- small spoon,
- at least two buckets (for rinsing and discarding waste),
- cooler and ice.



- Killing and bleeding trout

A freshly caught fish should be killed immediately and cleaned as soon as possible. Hold the fish in one hand and strike it on the head behind the eyes with a mallet. Remove the hook by grasping the shank with a pair of long-nosed pliers and backing it out. You can also use a special tool designed to remove hooks, available at sporting-goods stores.

Next, bleed the fish to prevent blood from spoiling the flesh. To do this, lift the gill plate, insert a knife over the gill cluster and cut the gills. Place the fish in a bucket of cold water to drain blood from the fish. You then can clean the fish immediately or place it in a cooler to clean later. Either way, be sure there's enough ice to surround the fish. Leave the cooler's drain plug open to allow water to run out. Water spoils the flavor of fish.

SAFELY CLEANING YOUR FISH

- Angle the knife to cut away from yourself.
- Take your time
- Remember the fish's mouth, gills, and bones can be sharp.

CLEANING

1. Hold the fish in the palm of your hand or place on a cutting board, belly up and head away from you. Locate the anus - a small, round vent on the lower belly of the fish. Insert the fillet knife a fraction of an inch directly above the hole and gently cut upward along the belly to the throat. Don't cut into the internal organs.
2. Turn the fish on its belly and make an incision across the top of the head behind the gills, but only cut to the backbone.
3. Place your fingers in the incision and pull the head forward. This movement will remove the head and guts. Discard in a waste container.
4. Scrape out the kidney-the long vein of blood that runs along the back bone- with your finger or a spoon.
5. Rinse in cold water.
6. Cut off the tail and discard if desired.
7. Rinse the fish in cold water and place in cooler with ice.

- Cooking your fish

Cook your fish that day or refrigerate it for a day or two. Because fish flesh deteriorates when it sits in its own juices, place the fish on a rack in a shallow pan filled with crushed ice. Cover with cling wrap or foil and set in the coldest part of the refrigerator. Trout will store well this way for up to two days. Trout can be fried, grilled, broiled, poached, baked or steamed.

CLEANING AND PREPARING TECHNIQUES AND TIPS FOR CLEANING AND PREPARING SALMON AND STEELHEAD

- Supplies

Items you'll need for killing, cleaning and transporting your fish include:

- a mallet,
- sharp fillet knife,
- hook remover,
- serrated knife,
- cutting board,
- at least two buckets (for rinsing and discarding waste),
- cooler and ice.

- Killing and bleeding salmon and steelhead

A freshly caught steelhead or salmon should be killed immediately and cleaned as soon as possible. The most effective way to kill a salmon or steelhead is to hold it in one hand and strike it on the head behind the eyes with a mallet. Remove the hook by grasping it with your fingers or a pair of long-nosed pliers and backing it out. You can also use a special tool designed to remove hooks, available at sporting goods stores.

To prevent blood from spoiling the tissue, make several cuts in the gills (located under the gill flap below the eyes) with a knife and place the fish in a cold bucket of water. This allows the blood to flow out of the fish. Immediately clean the fish or place it on ice in a cooler. !!!

- Safely cleaning your fish:

- Angle the knife to cut away from yourself.
- Take your time
- Remember the fish's mouth, gills, and bones can be sharp.

- Cleaning

1. Place the fish on the cutting board, belly up and head away from you. Locate the anus on the lower belly of the fish (small, round vent). Insert the fillet knife a fraction of an inch directly above the hole and gently cut upward along the belly to the throat. Don't cut into the internal organs.
2. Turn the fish on its side to cut off the head. Start cutting behind the head below the gill flap and pectoral fin. Cut down until you hit the backbone. Take care not to cut any internal organs. The meat on this side of the fish should now no longer be attached to the head.
3. Turn your fish over and make a similar cut in the opposite side until you hit the backbone.
4. Place your fish in whatever position is most comfortable for you and cut through the backbone to detach the head. You may need a sharper, or serrated knife.
5. Pull out the guts of the fish. Discard the head and guts in a waste bucket.
6. Remove the kidney — the long, dark red organ running along the top of the cavity underneath the backbone by cutting through it along its length. Then scrape it out with a spoon or your knife.
7. Cut off the tail and discard in the bucket.
8. Wash the fish thoroughly in cold water and place in cooler with ice. Your cleaned salmon can be cut either into fillets or steaks, as detailed below:

- Filleting

1. Lay the fish on its side and start a cut where the head was removed, just above the backbone.
2. Using a sawing motion, cut along the backbone towards the tail. You may need to hold up the meat at the bottom of the cavity to keep it from getting sliced by the knife.
3. Keep cutting until you reach the end. You now have one large fillet.
4. Turn the fish over and begin cutting the other side just above the backbone.
5. Using the same sawing motion, cut along the backbone towards the tail, keeping the meat up out of the way of the knife. You now have two large fillets. The only meat not recovered is a small layer along the backbone.
6. Now you need to remove the ribs that are attached to the fillets. Begin by inserting the point of your knife into the meat at the first rib's mid-point, just

beneath the rib, located toward the top of the fish. The meat and membrane between the ribs is semi-opaque so you should be able to see the knife blade through the meat. If you cannot see the blade then you've inserted the knife too deeply.

7. With a slow, gentle sawing motion, carefully cut towards the bottom of the fillet while keeping the sharp part of the blade angled slightly upwards to avoid getting too deeply into the meat. Your knife should be cutting right along the ribs.
8. If cut properly, you should have a small flap with the ribs, membrane, and a very minimal amount of meat. Using this technique, slowly work your way towards the thicker part of the fillet and towards the tail portion. You should end up with a long flap attached lengthwise to your fillet. This piece can be easily cut off.

A good photo tutorial on how to fillet a salmon may be seen on the [Northwest Fly Fisherman website](#).

STEAKING

Larger fish such as salmon and steelhead can be cut into steaks. After the fish is cleaned, chill it to make it easier to cut. Place the fish on its belly. Starting at the tail, cut across the backbone, making each steak approximately 1-inch thick. After making steaks, trim away belly fat and bones, but don't cut out the backbone.

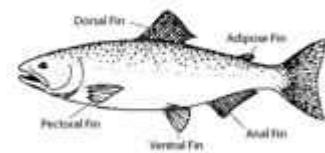
COOKING AND RECIPES

Cooking fish Cooking time is fairly short when cooking whole fish or fillets to keep the flavors simple. Fish are cooked when the flesh flakes off easily with a fork. In general, the cooking time for fish is 10 minutes for every inch of thickness—whether you bake, poach, broil, or grill. To test for doneness, slip the point of a sharp knife into the thickest part of the fish and pull aside. If flakes begin to separate, the fish is probably done. Remove fish from heat and let it stand 3 to 4 minutes to finish cooking.

- **Baking** Rinse fish and pat dry with a paper towel. Whole fish may be stuffed with rice and vegetables. Place whole, boned fish in a baking pan. Brush with butter and oil and season with salt and pepper, or cover with a piquant sauce. Bake in a preheated oven at 400°F (200°C) until a knife slice in the thickest part reveals the flesh to be opaque but still moist.
- **Grilling** Place whole small fish or fillets on perforated aluminum foil over a greased grill, 4 to 6 inches (10 to 15cm) above prepared coals or fire. Baste with butter, oil, or marinade, and close hood of grill. Cook until opaque and moist on the inside, 6 to 8 minutes for fish less than 1 inch (2.5cm) thick; 10 to 15 minutes for fish larger than 1-inch (2.5cm) thick.
- **Broiling** Rinse whole fish, fillets, or boned and butterflied trout, and pat dry with a paper towel. Place fish on a rack above a baking dish. Preheat broiler and adjust oven rack so fish is 3 to 4 inches (7.6 to 10cm) from the element. Brush with butter or oil and season with salt and pepper. Broil, turning once, until fish is opaque but still moist in the center, 3 to 10 minutes, depending on size of the fish.
- **Frying** Rinse fillets, and pat dry with a paper towel. Dredge in flour and seasonings if desired. Shake off any excess flour. Heat frying pan until hot, then add butter or oil. Put in fillets and cook, turning once, until fish is opaque but still moist in the center, 2 to 10 minutes, depending upon size of the fish.
- **Poaching** Bring poaching liquid, consisting of water, broth, and herbs and spices, to a simmer. Slip fish in, then cover pan and keep liquid at a simmer for about 8 minutes per inch (about 2.5cm) of thickness.
- **Steaming** Place fish on a greased perforated rack over 1 to 2 inches (about 2.5 to 5cm) of rapidly boiling water. Cover with a tight-fitting lid and keep water at a constant boil through cooking time, 8 to 10 minutes per inch (about 2.5cm) thickness of fish.

RECIPES

- **Chum Salmon Recipes**
<http://wdfw.wa.gov/fishing/salmon/chum/recipes.html>
- **Blackened Fish** (presented by WDFW for the Black Friday event)
 - Preheat cast iron skillet or griddle, preferably on outdoor grill, until very hot.



- Dip thick (at least one-half-inch) fish fillets into melted butter and then into cajun blackening spice mixture (equal parts black, white and cayenne pepper, paprika, garlic powder, onion powder, oregano, thyme).
- Cook in hot skillet about 2 minutes or until bottom is near black but not burned.
- Turn fillets, drizzle with more melted butter, continue cooking about 2 minutes. Serve immediately with dipping butter.

FISHING TERMS (GLOSSARY)

While you don't need to “talk fish” to catch one, it's important to understand the basic terminology of Washington fishing regulations. A more detailed list of fishing terms can be found in the ["Fishing In Washington" rules](#) pamphlet. Here are a few key phrases all Washington fishers need to know:

- **Sportfishing:** Also known as recreational fishing, sportfishing refers to fishing activity that is not conducted for commercial sale of the catch.
- **Recreational license:** Recreational licenses are annual, state-issued licenses to fish or gather shellfish in Washington.
 - **Fishing licenses are required** for fishing or shellfish gathering except during annual, Free fishing weekend (first weekend after the first Monday in June).
 - License prices are discounted for resident fishers over age 70; youth 14 and under can fish without purchasing a license.
 - Annual fishing licenses may be purchased in various forms—
 - for freshwater fishing only,
 - saltwater fishing only,
 - combination fishing license,
 - for shellfish/seaweed gathering, and
 - for razor clam digging.
 - Temporary licenses also are available.
 - Licenses may be purchased [online](#) or at hundreds of [retail outlets statewide.](#)
- **Seasons and rules:** Fishing seasons and rules are specific, state regulations developed to ensure fish and shellfish resources are fairly shared and are not depleted. Each year, non-commercial (sport) fishing seasons and rules are published by the Washington Department of Fish and Wildlife (WDFW) in the ["Fishing in Washington" rules](#) pamphlet, available on WDFW's website and at recreational license dealer outlets. Fishing regulations include statewide fishing rules as well as specific rules by location, that may restrict the species, size and number of fish that may be taken, as well when fishing may take place, what types of fishing gear can be used or other factors. It's important to check for specific rules for the location where you will be fishing and the species you intend to catch. The Washington Department of Fish and Wildlife enforces fishing regulations, and violators are subject to fines and penalties. Additional fishing rules may apply within national or state parks.
- **Emergency rule:** Also known as an “e-reg” (emergency regulation), an emergency rule is filed when it is determined that immediate action is necessary to change annual fishing rules. Emergency rules are adopted to reflect “real time” changes in fish abundance, fishing activity or other factors. WDFW announces emergency rules on our [fishing regulations website](#), on a Fishing Hotline (360-902-2500) or toll-free Shellfish Rule Change Hotline at (866) 880-5431 and through the news media. Fishers also may [sign up](#) to receive rule changes and other department news by email.

- **Angling:** Also known as “hook and line” fishing, angling is fishing for personal use (not for sale or barter) with a line attached to a pole that can be held in hand while landing fish, or by a hand-operated line without a rod and reel.
 - **Bait:** Anything that attracts fish by scent or flavor is considered bait, whether it's a live worm, fish eggs, chicken livers, or an artificial device dipped in fish-attracting scent. It's important to know that live fish are **not** allowed as bait in Washington sport fishing.
 - **Daily limit:** The maximum number (or pounds) of fish or shellfish of a given species and size that a fisher may legally keep in a single day.
 - **Food fish:** This term refers to species that are harvested in commercial fisheries, although recreational fishers harvest them as well. Food fish include salmon, sturgeon, halibut, tuna, shad, mackerel, common carp and forage fish, such as smelt, sardines, herring, sand lance and anchovy.
 - **Game fish:** This term applies to fish that are exclusively harvested by sport (non-commercial) fishes. Game fish species including trout, bass, whitefish, steelhead and landlocked salmon.!
 - **Hatchery salmon:** Hatchery salmon are Chinook or coho salmon reared in a hatchery, rather than naturally spawned. To identify them as hatchery fish, the adipose fin (on the back near the tail) is removed when they are juvenile fish. Fishers can identify a hatchery fish by checking for a missing adipose fin and a healed scar at the location of the fin.
 - **Hatchery steelhead or trout:** Like hatchery salmon, except these species may be marked by either a missing adipose or ventral fin.
 - **Mark-selective fisheries:** Developed to protect naturally spawning salmon or steelhead, while allowing fishers to target hatchery-produced fish. Selective fisheries require fishers to check their catch for a missing adipose fin, indicating the fish was marked in the hatchery.
 - **Jack salmon:** Salmon that return to rivers and streams at a younger age than most of their species. In freshwater, a jack salmon is defined as a chinook salmon less than 24 inches in length or a coho salmon less than 20 inches in length.
 - **Lure:** Something that attracts fish to the hook by imitating the appearance of their food, by triggering their territorial behavior or by provoking their curiosity. Lures types include spinners, spoons, plugs, jigs and soft, plastic lures that simulate worms, grubs, fish, frogs and other natural fish food.
 - **Night closure:** When a night closure is in effect, fishing is closed from one hour after official sunset to one hour before official sunrise.
 - **Selective gear rules:** In some waters, only unscented artificial flies or lures with one, single-point, barbless hook are allowed. See the ["Fishing in Washington"](#) rules pamphlet for additional information.
 - **Snagging:** Hooking any fish in a way that does not involve the fish voluntarily taking the hook(s) in its mouth. In freshwater fishing, it is illegal to possess a fish hooked anywhere other than inside the mouth or on the head.
 - **Statewide rules:** Catch limits, size limits and other fishing regulations in effect for most—but not all—waters in the state. Statewide rules are printed near the front of the ["Fishing in Washington"](#) rules pamphlet; exceptions to those rules are noted in fishing rules for specific waters.
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FOOD STORAGE

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WHY START A FOOD STORAGE PLAN?

What are the reasons for getting started with a food storage plan? Getting started with a food storage program of your own can sometimes feel overwhelming. There are so many different ways to store food that it can be confusing trying to figure out where to start and what type of food to start with. So what we'll do here is just begin to cover basics of what you need to know before you start on your home food storage system.

First you need to decide why it is you're storing food? Because what you want to store, how much you will need to buy of it and how you will store it will depend on your answer. So asking yourself this question and figuring out the answer is an important step to creating your very own food storage program. So what are some reasons behind why we need to store food? The answer to that is as simple or as complicated as we want to make it.

On the one hand, we truly are becoming more and more of a global society. The droughts in one country have an impact on the availability of grain in another. Political unrest also plays a part in whether food being transported or shipped overseas actually makes it to its destination. Acts of global terrorism or piracy could potentially shut down air traffic and shipping routes indefinitely. So many factors take place "behind the scenes" that it doesn't take much to disturb supply routes between countries, effectively making it harder and harder for people to buy the food they need to survive.

On the other hand, our reason behind storing food could be as simple as running out of time and needing to cook dinner from foods we have stored in our cupboards. Or maybe we live in an area that is affected by storms and we can't always count on being able to get to a store whenever we want to. Whatever our reasons, accurately deciding why we want to store food plays a large part in getting started and determines what to buy and how we'll store it.

TYPES OF FOOD STORAGE

There are basically three distinct classes of food storage: Survival Food Storage (short term), Emergency Food Storage (medium term), and a Long Term Food Supply.

Food storage can be broken down into three basic categories based on the length of time it can supply food for. A *survival food storage* is a short term supply that will last from a minimum of three days (72 hours) up to one month. An *Emergency Food Supply* is a medium term supply capable of providing for one adult a 1-month to 2-month supply. Lastly, there is a *Long Term Food Storage* which is able to provide food for a person for a year or longer.

We live in a rapidly changing world full of cataclysmic natural, as well as, manmade events. Historical events that can temporarily, or forever change the world around us. Look at how much has changed in the way people live, survive, and interact with the world around them in just the course of a few generations. Lewis and Clark did find an overland passage to the west coast of the United States until 1806. It was barely a generation ago that our grandparents lived a subsistence lifestyle in which they provided for themselves. Today much, and in some cases, all of that knowledge has been lost and replaced by entirely different skills. Most of us are completely dependent on complex manufacturing and distribution system that is highly dependent other highly complex systems. Man-made systems such as continued supply of cheap fossil fuel energy, as well as, natural systems such as weather patterns. All of these systems are sustainable to both man-made, as well as natural disasters. Man-made in the form of war or strife, energy supply shortages, or simply power disruptions. Natural in the form of earthquakes, hurricanes, tornados, flooding, and volcanic eruptions, and meteor strikes to name a few!

... and yet, in light of all this, most of us are far less prepared for a minor or major disaster than our grand parents and there parents, who had far better subsistence skills that we do today.

[Survival Food Storage \(short term\)](#) - This the starting point for a basic food supply in the case of very basic need. This is a minimum storage that is recommended for you and your family to prepare in advance and updated every two to three years as food it contains expires. We have some recommendations for the types of foods, and how they are packaged, that you should be thinking about for this.

[Emergency Food Storage \(medium term\)](#) - This is a storage that you build to once you have your survival food store established. This is a store that will provide a couple months or more of food. The trick to putting this storage together is to know what to store, and how to store it. We have multiple articles and information that can help provide you with all the necessary information to do this.

[Long Term Food Storage \(1-year or longer\)](#) - This is for those who are serious about being able to provide for themselves and their family in times of great need. This

system is meant to be able to provide food for you and your family for one year or longer. Putting together a supply like this may seem impossible, but it is actually really easy and will probably cost you about as much as you spend on home and auto insurance over the course of a year!

TYPES OF FOOD YOU SHOULD STORE LONG TERM

There four types of grains that are a must in every long term food storage because of how long and how well they store. How long you need to store food and what you like to eat will determine the types of food that you should store. However, there are a few core types food that have long been used for storage purposes by individuals as well as organizations and governments.

Wheat, Rice, Beans, and Oats are types of food that lend themselves very well to long term storage. Grains are a great source of nutrition as well as being very healthy for your heart and digestive system being high in fiber. These foods are stored in their dry form and packaged in a way to prevent them from drying further, as well as to prevent them from being exposed to environmental factors such as air, humidity, and temperature as much as possible. There are various [types of containers](#) such as dry-canning in #10 cans, vacuum sealing, as well as using Mylar bags and/or 5 gallon buckets to extend the shelf life of these foods that all work well. Of course storing in a cool, dark, and dry place will further extend shelf life.

When properly stored, all of these common base foods can last in excess of 20 years and still retain taste and nutritional value. Use the links below to take a closer look at each of these excellent foods for long lasting storage :

- [Wheat](#) - Wheat should serve as the foundation of your food storage (provided that you are not allergic to it). Of the grains you store, wheat should make up the most, recommended to be approximately 50%.
- [Rice](#) - Commonly used throughout the world as a basic food source. Rice should make up approximately 20% of your total grain storage.
- [Beans](#) - A major source of fiber and protein, beans should make up another 20% of your total grains stored.
- [Oats](#) - Very healthy food source with strong nutritional value; 10% of your grain store should be allotted to oats.

FOOD PRESERVATION METHODS

There are various ways to preserve food. The method that is best will depend on the type food as well as how long the food needs to be preserved for. Lets learn about the strengths and differences of the different methods.

There are a variety of ways to preserve food for future consumption. Which type of container you use will depend on what you want to store and how long you will want it to last. So to help you decide which might work best for you, we'll give you a general description of each one as well as giving you a few pros and cons to consider about them. We'll be discussing :

- [Canned](#) - There are a few different types of canning to keep in mind. First you have dry canning of items like wheat, rice, and beans (dry of course). Then there is wet canning for things that are wet (chilis, sauces, etc...). You can further break wet canning into High-Acid Canning and Low-Acid Canning. Learn more about these processes [here](#)!
- [Freeze Dried](#) - Is almost exclusively done at the commercial level. It is useful to know how freeze dried food is created and the strengths of weaknesses of adding this type of food to your personal food storage. It is a super light weight and nutrient dense type of food storage. Because of freeze dried food it is possible to store things like eggs (once freeze dried) in excess of 5 years. The huge assortment and the amazing convenience of just add water meals is a huge plus as well.
- [Frozen](#) - Everyone knows that freezing most foods will allow them to last much longer. But how can you store foods in a way to help them last in the freezer much longer? Here we provide information about how to make the most of freezing foods including how to prevent freezer burn and other common problems and mistakes.
- [Dehydrated](#) - Dehydrating of foods is probably the oldest method for preserving food that we know of. There are many ways to do it, but with the invention of cheap do it at home food dryers, there is only one we recommend! It's interesting to know how it was done in the past; it helps us appreciate how easy it is for us today. Once you have dehydrated fruits, vegetables, or meats a few times, you will find yourself asking... why don't I do this more often?

TYPES OF FOOD STORAGE CONTAINERS

There are various types of food containers to consider. Which is best will be determined by your storage needs, resources, storage environment and the length of time you need to preserve the food source for.

There are a variety of ways to store food while still maintaining quality. Which type of container you use will depend on what you want to store and how long you will want it to last. So to help you decide which might work best for you, we'll give you a general description of each one as well as giving you a few pros and cons to consider about them. We'll be discussing:

- [Can and Glass Jar \(common cans and jars\)](#) - This is typical of what you will find at your local supermarket in canned goods. This includes canned food, as well as "jarred". While there should probably be a distinction, the term "canned" refers to both common cans and also glass jars, while the term "jarring" does not exist! In either case the process remains the same and is mostly determined by the food and not the container.
- [#10 Cans \(large cans for dry foods\)](#) - You have probably seen #10 cans at Costco's, Sam's or other large warehouse stores, or even the local supermarket. This is the Jumbo size can that is the size of large coffee cans. You can dry pack food such as rice, wheat, beans, pastas, oats and other dry foods into these cans with an oxygen absorber and have a food source that can easily last over 20 years.
- [Vacuum Sealer Bags](#) - Vacuum Sealers are a home food storage tool that no one should be without. Extremely convenient and easy to use, no other container method is as versatile. It possible to do dry pack storage just like cans, as well as things such as meats and "wet" foods for freezing. The packaging is airtight and lightweight. If your only going to go for one type of food container method for your personal storage, this is it.
- [Mylar Bags](#) - Think of your food sealer on steroids. This bags are metallic in function and not only create and airtight environment, but also prevent light from reaching the product. Separate sealers are sold, but you can get away with an iron and coat hanger. Available in different sizes, think about the 5-6 gallon size and use them in conjunction with 5 Gallon Buckets (below).
- [5 Gallon Buckets](#) - Yeah, these are the typical buckets you see at the hardware store, or that some products are available in a Costco's, Sams Club and the like. The key thing here is to make sure you get the "food grade" plastic material! The buckets work very well in combination with the Mylar Bags (above). These buckets give Mylar a super tough outer shell to further protect its content. A must if you are worried about rodents accessing your food storage without your permission!

CANNING FOODS

There are 3 things you need to know when it comes to canning foods. The first is that the right tools make all the difference, so invest in them right away because they make everything else run so much better. The second is that even with all the right tools you're still going to get hot, sweaty, sticky and probably even a little bit mean.

But keep in mind the third thing you need to know about canning: In December when it's cold outside and you're eating some of your canned foods from summer, that's when it'll be worth it. It'll not only bring a little bit of summer warmth and sunshine into your wintry day, but they also make great Christmas gifts for only half the price! So all the effort really does pay off.

When it comes to canning there are basically two types of food There are low acid foods, and high acid foods. An example of low acid foods is vegetable, meats, and seafood. High acid food consists mainly of fruits and tomato's, salsa's, pickles, jams, jellies, etc. The type of food you're canning will determine which canning method you'll use.

If you're canning high acid foods (such as fruits and jellies) you'll be keeping things fairly simple and inexpensive. You'll be doing a type of canning called the "Boiling water bath". It's almost exactly what it sounds like. You're basically just placing the cans in boiling water for a few minutes and then removing them to cool. It's a labor intensive process, so make sure to call in friends ahead of time to help. They not only make the time go by fast but they also are usually happy to go home with a jar or two of preserves for themselves.

What you'll need to get started with is a large pot, one that's deep enough to hold your pots with a couple inches of head room at the top. You'll also need a jar lifter, which is like a big pair of curved tongs. These work so much better than regular tongs that they're worth the price. (It's been my experience that regular tongs don't grip very well, and suddenly when you least expect it they'll slip and splash you with hot water.) You'll also need a large funnel, for filling the jars. And finally a spatula for removing air bubbles.

If possible see if you can find a magnetic lid lifter-for lifting out the lids from the hot water. My friend had one of those and it prevented a lot of burned fingers! Oh! You'll also want a wire rack to place in the bottom of the pot to keep the jars just off the bottom. This will prevent them from getting too hot and cracking. Once you gather all your tools, you're ready to begin.

First, prepare your recipe according to the instructions. Make sure you follow the recipe exactly and use the recommended processing time for the food you're canning. The times do vary, depending on what you're canning, so stick with what it tells you to do. Also, make sure the jars you're using are for canning. Because canning jars usually have thicker lips on them and this will prevent them from cracking from the

heat. Not every jar is a canning jar and it's better to make sure now that to have to clean up the mess later on in the process.

Next you want to thoroughly wash all your jars, lids and bands. Make sure that they're all in good shape without any scratches or dings in them. Check to make sure your lids and bands are clean and free from rust. Once the jars are clean, you need to heat them in a hot pot (not boiling hot) but still very hot water. Keep the lids in a smaller pot so that they're easy to get to with your magnetic lid lifter, if you're lucky enough to have one. In the past when I canned, I simply ran my jars through the dishwasher and put it on steam, which heated the jars up really well and kept them hot till I was ready to use them.

I'm not sure that that's as sanitary as using the hot water bath, but at the time I only had one pot to cook with. And the jam I was making turned out really well. The whole purpose behind heating the jars first, is it prevents them from breaking later when you put them into the boiling water.

So by now you should have your recipe made, jars in hot water, lids in hot water, and you should be ready now to get the pot you're canning with underway. So what you want to do it fill the pot up about halfway with simmering water. Don't forget to put your canning rack on the bottom of the pot!

Now you simply remove a hot jar from the water, (or dishwasher, in my case) and fill the jar with your prepared food. Makes sure you leave some headspace at the top, depending on the recipe. It'll vary, depending on what you're canning but the space is usually never larger than a 1/2 inch. Then go ahead and run your spatula between the food and the edge of the jar, this should help remove the air bubbles that can get trapped inside. Once that's done, you need to clean the rim of the jar.

Cleaning the rim of the jar allows for a better seal, and less contaminant can get into the food. Then place the lid on the jar, tighten down the band (not too tight, because you will want to get it off one day), and then they're ready for their bath!

Place the jars in the pot with the simmering water, making sure the rack is on the bottom for them to rest on. If you're using an actual canning rack, they often come with a handle so you can just fill the rack and then lower them all at once into the pot. If your rack doesn't have a handle, just use those nifty tongs and lower the jars in one at a time. It doesn't really matter how the jars get in there, just so long as they all get in.

Then place the lid on the canner, bring the water to a rolling boil and start your recommended processing time. (You're almost done!)

When they've boiled for the recommended time, go ahead and remove the lid and turn the heat off. Some people recommend waiting 5-10 minutes before removing the jars from the water. I never knew that and used to always remove my jars immediately so I could get started on my next batch. So check your recipe and see what it says, and then follow that.

At any rate, when you do remove them from the water place them somewhere that you can leave them alone for awhile. For the seal to set, you need to leave them undisturbed for 24 hours. It's tempting, but don't test their seals just yet!

After 24 hours, you can check to see if the seals are good by making sure the top is indented, not popped up but rather concave. And if you remove the bands, the lid cannot be lifted off by gentle pressure from your fingers. If that's the case, congratulations! Your canning was a success and you'll be enjoying a little bit of summer all winter long! (Whew!)

Here's an interesting trivia question about canning: Do you know who came up with the idea of how to can foods? Believe it or not it was the French. Apparently during the Napoleonic Wars, they were having a hard time keeping their soldiers fed. (Hard to fight on an empty stomach, I guess). So they ran a competition to see who could come up with a new way of storing food that was cheap but would still keep the food preserved. A man named Nicolas Appert came up with the idea of canning food and won the competition. Just thought that was kind of interesting to know.

FINAL STEPS OF THE CANNING PROCESS

Ok, now back to work! Lets continue.

If you've decided to can low acid foods, it's going to a bit more expensive and even more complicated. That doesn't mean it's not worth doing, it just means you really need to get set up well. And you really need to be careful to follow the manufacturer's instructions on your specific pressure canner.

First, you'll need a pressure canner. These can get expensive so you might want to see if you can find one at a second hand store, or even a local co-op that will lend them out. You'll also need a jar lifter, which if you just bought one for the previous canning session then you're already saving money!

Once again you'll need a funnel to help with filling the jars. It will save a lot of time in cleaning off the rims if you have one of these, so they're worth investing in simply as a time saver. You'll want a spatula for removing air bubbles, and a magnetic lid lifter if you can find one. They save on burned fingers, and at the end of the day they're worth it.

Now the next few steps are the same as they were when you can high acid foods.

First, prepare your recipe according to the instructions. Make sure you follow the recipe exactly and use the recommended processing time for the food you're canning. The times do vary, depending on what you're canning, so stick with what it tells you to do. Also, make sure the jar's you're using are for canning. Because canning jars usually have thicker lips on them and this will prevent them from cracking from the heat. Not every jar is a canning jar and it's better to make sure now than to have to clean up the mess later on in the process.

Next you want to thoroughly wash all your jars, lids and bands. Make sure that they're all in good shape without any scratches or dings in them. Check to make sure your lids and bands are clean and free from rust.

Once the jars are clean, you need to heat them in a hot pot (not boiling hot) but still very hot water. Keep the lids in a smaller pot so that they're easy to get to with your magnetic lid lifter, if you're lucky enough to have one.

In the past when I canned, I simply ran my jars through the dishwasher and put it on steam, which heated the jars up really well and kept them hot till I was ready to use them. I'm not sure that that's as sanitary as using the hot water bath, but at the time I only had one pot to cook with. And the jam I was making turned out really well. The whole purpose behind heating the jars first, is it prevents them from breaking later when you put them into the boiling water.

Here's where things start to differ from the Boiling Water Bath way of canning. Next you need to get the pressure canner ready to go. Put the rack in at the bottom and fill it with 2-3 inches of water. Place over medium high heat and bring it to a simmer, not a boil yet, just a good strong simmer.

Fill your jars according to the recipes directions, making sure to leave the appropriate headroom-usually about 1/2 an inch.

Run your spatula between the jar and food, removing any air bubbles that might have been trapped inside. Clean your rims with a clean, damp cloth. This allows for a better seal and prevents any contaminants getting into your food. Remove your lid from the hot water, using that magnetic lid lifter if you're lucky enough to have one. I know Ball makes a really good one, and I've seen them in most quality cooking stores. Then go ahead and apply the band tight but not too tight, because you will want to get it off later.

Go ahead and place the jars in the pot, again using the funny looking jar lifter. Fill the pot up and then make sure it still has the recommended amount of water in it. The recipe should tell you exactly how much it calls for, but usually it's only 2-3 inches. Because the pressure cooker uses steam to heat the jars, not a boiling water bath. Lock your lid in place, but leave the vent open.

You want to release all the air before you close it. Once you notice only steam coming out close the vent, add your weighted gauge and begin to adjust the heat to achieve the temperature you need for your recipe. Make sure you follow the specific instructions for your recipe, and for your pressure canner.

Once you've processed for the recommended time, at the appropriate pounds per pressure go ahead and turn off the heat but don't remove the weighted gauge. I said DON'T remove the gauge! I don't mind cheating a bit when it comes to the other type of canning, sometimes I don't let the jars sit in the water and cool like they're supposed too. But I don't cheat at all with a pressure canner.

Make sure you read and follow the manufactures directions and instructions! Those instructions will most likely tell you not to remove the gauge or fiddle with the canner until the pressure drops to zero on its own.

Then follow the manufacturer's instructions before removing the weight and unlocking the lid. Make sure you let the jars sit at zero pressure for a couple minutes before removing things. To be safe, make sure you remove the weight and the lid while the pot is tilted away from you.

Now it's safe to go ahead and remove the jars. Again, just like in the hot water bath, you'll need to set them somewhere and leave them undisturbed for about 24 hours. Once time has passed, check the lids for good seals.

Lids should be slightly indented and should not "pop" when you push on them. If the seal isn't good, you can go ahead and start the whole process all over. Or if that seems too overwhelming, just eat it for dinner and be done with it.

Congratulations! You have successfully preserved food using a pressure cooker. Now your food won't go to waste, and you can be proud of sticking with it. In the months to come you will be glad you did.

HOW TO DEHYDRATE FRUIT

Use a food dehydrator to dry fruits at home. Dried fruits are very tasty and nutritious. The drying process removes most of the water from the fruit, leaving behind the concentrated fruit flavor (and sugars). Something to remember is that food dehydrators remove the water, but NOT the calories! Some types of fruit that are good dried are apples, mangos, apricots, plums, pears, grapes, bananas, cherries and all type of berries.

You're limited mainly by your imagination and the availability of produce in your area. While exactly how you'll dry fruit varies depending on the food dehydrator you buy, there are some basics you need to know: First, make sure to inspect all the fruit before you begin. You want to make sure that it's all clean and undamaged. Any bruising that appears on the fruit could be cut out now.

Second, prepare the food that you want to dehydrate. Make sure that everything is peeled and cored before you go any further. This is the time to decide if you want your fruit dried in slices, strips, or if you want it dried in halves. Understand that the larger the piece of fruit is, the longer it will take to dry. Make sure to read the manufacturers directions that come with your dehydrator. They give good suggestions to follow when it comes to preparing the fruit.

Some fruits (such as grapes, blueberries, cherries, etc.) have a really tough and waxy outer-skin that needs to be broken before being placed in the dehydrator. You can do this fairly easily by placing them in boiling water for about a minute. Just leave them in long enough to soften and to crack their skins. Then place them into cold water to stop the cooking process, and drain thoroughly. (This is almost exactly like blanching vegetables). What this does is it allows the moisture to evaporate out of the fruit as it's dried in the food dehydrator. If you're going to slice them up before dehydrating, then you don't have to worry about cracking their skins.

Finally, keep in mind that light colored fruits such as apples, bananas, pears, etc. tend to turn brown when they're exposed to the air. This is called oxidation and if it is not stopped it can ruin the flavor and appearance of the fruit.

To help the fruit retain its color and flavor mix a small amount of ascorbic acid into 1 cup of water and sprinkle it over the fruit as you go. (You can find ascorbic acid at almost any store).

Another way to help fruit retain its color and flavor is by treating it with sulfur. The easiest way to do that is by soaking it in a sulfite solution. You do this by adding 1-2 tablespoons of sodium bisulfite to a gallon of water. (You can find sodium bisulfite at a health food store, or most wine stores. Or if all else fails, you can always buy it online.) Just make sure that its food grade because they do make sulfur for gardening and other uses. It has to be food grade! Soak the fruit in the solution for 5-10 minutes and then pat dry. (Don't rinse it). Then you can begin the drying process immediately.

Keep in mind that there are many ways to prepare and dry food, and when in doubt always follow the manufacturers' guidelines.

Grandma used to dry fruit all the time, and she never used anything other than ascorbic acid to preserve her fruit. She would peel and core her apples before slicing them into rounds. Then she'd sprinkle them with an ascorbic acid mixture and dip one side of the apple into a flavored gelatin. Then she'd dry them according to her food dehydrator guidelines. We never had to worry about the fruit spoiling, because they never lasted long enough to go bad.

After this last step, fruit is ready to be placed in the dehydrator and dried. Make sure as you put them on their racks that they are far enough apart that they don't touch each other. This will give the air a better chance to circulate between levels and dry the food more evenly. Keep in mind that fruit is generally sticky, and a good tip is to spray the trays with non-stick cooking spray before placing the fruit on them. It makes it so much easier when you have to turn the fruit over, if it doesn't stick to the trays! Follow the instructions according to your food dehydrator, and anywhere from 6-12 hours and you should be done.

You can check for dryness by cutting open the fruit and looking for any moisture. The fruit should be completely dry with no signs of moisture inside. You don't want to dry it past the point that it's still pliable, meaning an apple slice shouldn't snap in your hands like a twig! You should be able to bend it in your hands and have it spring (slowly) back into its regular position.

Once the fruit has cooled completely, you can store it in air-tight containers anywhere from 6 months to a year. Some people like to vacuum pack their dehydrated foods and store them in their freezers. This will add greatly to their shelf life, if you have the room for it. Dehydrated fruit should store anywhere from 6 months to a year, as long as no moisture gets into their containers and they were properly dried in the first place.

Dried fruits make great additions to cereals, muffins, and granolas. With just a little bit of effort, you can enjoy the fruits of your labor long past the golden days of summer.

HOW TO DEHYDRATE MEAT

Almost any meat can be dehydrated as long as it's lean. Beef, venison, and buffalo all work out really well. You just have to be really careful to trim all of the fat off of it, because fat can become rancid and will spoil the meat.

Special handling is required when it comes to preparing meat for the dehydrator. It's very easy for meat to become contaminated so make sure you follow the directions that come with your food dehydrator very carefully. It's recommended that you first cook the meat you're going to dehydrate to 160 F before you begin to dehydrate it. This will kill the bacteria in the meat that can make you sick, such as salmonella and E coli. Also make sure to keep the meat in the refrigerator until you're ready to use it.

Meat is usually sliced into small strips and then seasoned by using either a marinade or a rub. You can use almost any seasoning you want, it really just depends on your own personal tastes. Many stores carry a variety of seasoning packs and marinades that can be added to the meat. Just season according to what you like and then place the strips on the dryer and dry according to manufacturers instructions.

Make sure to spray the racks with a non-stick cooking spray first, before adding the meat. It helps it not stick to the tray when you're trying to turn them over. Also, leave lots of room between the meats so that the air can circulate evenly and dry all the strips at the same time. You may need to put some tinfoil on the bottom of your dehydrator to catch all the grease that will drain out of it. If you do this, just make sure to leave enough room around the edges for the heat to flow around it.

The meat is dry when it's done to your taste. If you like it a little chewy, don't dry it too long. You can test it by trying to break it in half, because it shouldn't be able to snap cleanly in half. You should not be able to see any of the moisture inside it. Although it should still have enough moisture left that you have to twist and turn it a bit before you can break it apart. My friend likes to dry hamburger for using when he goes camping. This he dries almost to dust, and then he uses it in his stews at the campsite. It tastes really good, but I wouldn't dry it this long if I were trying to make jerky strips.

Once the meat is dried and you have allowed it to cool completely, remove it from the racks and prepare it for storage. It should be stored in air tight containers or vacuum bags that have the air removed from them. Dehydrated meat will store 6 months to a year as long as it's stored in a cool dry place.

HOW TO DEHYDRATE VEGETABLES

Drying garden vegetables at home When it comes to storing vegetables, not all need to be dehydrated. For example, potato's and carrots store really well in a cool dark place all winter long. While they can be dehydrated like any other vegetable, since they store so well on their own there really isn't a need to dehydrate them. Peas, broccoli, green beans, corn, etc. on the other hand are really easy to dehydrate and make it possible to store them for a lot longer than by storing them fresh.

First what you need to do is start by cleaning the vegetables and wash all the dirt off of them. Make sure any bad spots are cut off and thrown out. Go ahead and either shell them, or cut them down to a more suitable size. The smaller they are, the quicker they'll dry. Try to keep their size uniform with each other, as this helps them all dry in about the same amount of time.

The next step is blanching. Almost any type of vegetable needs to be blanched before it is stored. It doesn't seem to matter if you're preparing them to be frozen or dehydrated, either way they still need to be blanched. What blanching does is it stops the enzymes which ruin the taste and the color of the food. By blanching, you ensure that the vegetables stay vibrant and fresh tasting until you're ready to use them.

Blanching is fairly simple, but it is time consuming. You simply get a pot of water boiling and then take the metal colander filled with vegetables and place it into the hot water. It usually only takes just a few minutes, but follow the same time guidelines that are used for when you're preparing food to be frozen. The time does vary somewhat according to type of vegetable, so make sure to double check before switching to other vegetables.

Once they've been blanched, immediately remove the vegetables and place them in ice cold water. This will stop the cooking process. Drain them well, and make sure they're dry before moving on to the next step.

The next step is dehydrating the vegetables. Once they are completely dry, place them on the dryer racks. It helps later if you first spray the racks with a non-stick cooking spray. Make sure not to place too many vegetables on the rack, you want plenty of room for the air to circulate and evenly dry them. Follow the food dehydrators guidelines for how long the vegetables need to be dried. It usually takes anywhere from 4-12 hours to dry. The length of time will vary depending on what type of vegetable is being dried, and the size that it is. You can test for whether it's done by how dry the vegetables are. As silly as it sounds, they should be dry enough to turn to crumble if you hit it with a hammer.

Dried vegetables are great when added to soups or casseroles. You can use them in any manner that you would use frozen vegetables, just make sure they have enough liquid to re-constitute.

HOW TO BUILD AN UNDERGROUND ROOT CELLAR

Your garden has come in and the bounty of it has been dispersed to family and friends. However, you still have more produce than you can consume. What to do? You can process some of it in a pressure canner or freeze it. Some vegetables, though, and a few fruits do not do well canned or frozen. Perhaps it is time to build an underground root cellar.

STEPS

1. **Understand that the key elements of a root cellar have to do with temperature, humidity and ventilation.** Keep these three details in mind and the cellar can be built using just about any method. Building material options include native stone, concrete cinder blocks, earth-packed tires or cedar logs for walk-in root cellars. The most common of these is to use concrete cinder blocks. This material is readily available from a DIY store.
2. **Think out of the box for your underground root cellar.**
 - Use a fiberglass water tank. These will be easy to modify and bury.
 - Bury a 50-gallon plastic drum in the ground.
3. **Cover either of the above choices with 1 foot (30.48) of dirt or other coverage** for temporary fall storage.
4. **Locate your root cellar in an area that has good drainage away from it.** Ideally, this would be on a hillside facing north and limiting exposure to the opening of the cellar.
5. **Excavate** for the root cellar so that, when the walls are buried, you have at least 4 feet (1.22 meters) of coverage. Ten feet (3.05 meters) is even better.
6. **Vent the cellar by installing two PVC pipes.** One pipe must enter the root cellar low to the floor to let cool air in, and the other one needs to be near the ceiling to vent out hot air. The vent pipes will need to be screened to keep out pests and to protect the produce from weather that is too cool or too warm. Remember, cool air settles and warm air rises.
 - Ventilation is also important to remove ethylene gases that fruit and vegetables produce as they ripen. Venting ethylene gases slows down the ripening process.
7. **Create an entry** to the root cellar.
 - The door to the root cellar plays a double roll -- to keep the varmints and unwanted visitors out and to keep the cool air in.
 - Most root cellars have 1 door at the surface and a second at the wall that opens to the root cellar (if this exists). This entry way acts as a little extra insulation in the form of dead space to keep the cool air in.
8. **Cover the floor of your root cellar with gravel or even a concrete floor.** Either one can be wet down to help raise the humidity when you need it.



9. **Choose wooden shelves over metal.** Metal transmits heat, warming up faster than wood. Wood helps you keep the temperature more in control as a result.
10. **Place a temperature and humidity gauge in the cellar and keep a record of the readings.** This will help you to track how effective these numbers are and reflect the best way to maintain your root cellar.

<http://www.wikihow.com/Build-an-Underground-Root-Cellar>

CANNING FOOD FOR LONG TERM FOOD STORAGE

Long term food storage is very important in urban homesteading today. After a successful season, the homesteader is wise to preserve their harvest. They worked hard and planted extra so as to supply their needs beyond just the summer harvest, and need to be prepared to preserve the fruits of their labor.

There are a few options for food storage, such as dehydration or freezing, but the long term food storage method for today's discussion is canning food. Canning food can be done to store the fruit or vegetable itself, such as peaches or tomatoes, or it can be done for creating staples from recipes like a peach jelly, or tomato paste.

Home canning has been done for ages. The basic principle of canning, for food safety, is to expose the food to a high temperature, that will stop decay and bacteria in the food. Sterile, airtight containers, generally glass jars with removable seals and ringed bands, are used to package the food, and then they are exposed to a high temperature, either through pressure canning or using a water bath canner.

While many foods can be safely canned in a water bath, those with a lower acidity are the exception, and should be preserved by using the pressure canning method. Many vegetables, like corn, carrots, squash, beans, mushrooms, spinach, bell peppers, and asparagus have a lower acidity and should be pressure canned. Meats should also be pressure canned.

A general rule of thumb, higher acidity foods can be preserved in using water bath canning, and lower acidity foods should be preserved using a pressure canning. Specifically, foods above 4.5 pH may be safely canned in a water bath canner at 212 F. Foods below 4.5 pH need to be processed using a pressure canner at 250 F or higher.

Whether you are using a water bath or a pressure canner, a rack is needed to keep the jars off the bottom of the canner. Glass heats more slowly than metal and jars are more liable to crack as a result.

There is great information all over the web and in books that can be helpful resources for long term food storage. Things like a pH chart of commonly canned foods, and information about why foods spoil, botulism, and various methods of preserving food including canning, pressure cooking, freezing, drying, root-cellaring, and curing.

Article Source: <http://EzineArticles.com/5733709> By Sandi Baine

WATER STORAGE

How to store water for long term, emergency, or disaster situations... Whenever I think of water storage I think of that old "Rule of 3" that survivalists like to teach: You can live 3 months without love, 3 weeks without food, 3 days without water, 3 hours without shelter, 3 minutes without air and only 3 seconds without using your head.

This rule helps me to put into perspective the importance of storing water along with food. I really want to live longer than just 3 days! All the food in the world won't do me any good if I don't plan ahead now to store water along with my food. Keep in mind; you need approximately 2 gallons of water, per person per day. So that's about 14 gallons a week, per person. This will give you enough water to drink and cook with while still leaving you some to wash up with. When it comes to storing water, it's better to have a little more than you really need than to have not enough.

Before you begin to store water you need to decide if you're going to use it to drink with, or to wash with. If you want to drink out of it, then it needs to be stored in high quality food grade containers. Almost any store that carries camping supplies will have their water containers specifically marked. Be careful to stay away from ones that might be too heavy for you to lift once they're filled with water. While a 50 gallon container of water looks impressive on the shelf, it'd be murder to try and move it if there ever were an emergency and you had to leave your home suddenly. So keep at least some of your water containers mobile enough that you could take them with you if you needed to suddenly leave your home.

If you don't have the money to buy new water containers, then it's time to get creative! It's possible to just clean and reuse what you already have. Old soda containers are great for storing drinking water some people even recommend using bleach bottles that have been washed out, although I would use those for other water needs than drinking. If you do, don't use the scented bleach containers to store drinking water, as they have extra additives that are almost impossible to wash out and aren't any good for ingesting.)

Something else to think about, when you're storing those soda bottles filled with water, or the gallon sized jugs, is it is possible to stick them in the freezer (if you have one big enough). They freeze well and have the added benefit of being able to help keep your freezer cold in the event of loss of power. Should you need them to drink, just take them out and let them thaw for awhile. The 2 liter jugs of soda handle freezing really well, although the bottom does distort and is no longer flat when you take it out. Just make sure to leave room at the top of all the containers for them to expand a bit.

Some other items you could reuse are plastic juice containers. They work just fine when it comes to storing water. For me though, it's just easier to buy bottled water for drinking and store it where it's easy to get to. If you watch the grocery store sales in your neighborhood, it's often possible to buy gallon size jugs of purified spring water for under a dollar. So make sure to keep your eyes open for the sales.

Home Water Storage - Part II You'll need to purify the water you're storing yourself. It will insure good clean water for you to drink in the case of an emergency. If you are drawing your water from a municipal (city) well, then more than likely it won't need to have anything more done to it. Just go ahead and store it, as most of these water supplies have already been purified.

But if you're drawing your water from a private well, then you'll want to add 1/8th of a teaspoon of bleach (use the kind without any scents or additives) for every gallon of water you're storing. Bleach is a great way to purify water. Non-chlorinated water should be treated with 1/8 teaspoon of bleach for every gallon of water. Just use plain bleach and that'll do the trick! That will help to keep it clean and fresh for when you need it. When you go to use it any residual smell (from the bleach) will dissipate if you leave the container to sit out in the open for awhile with its top off.

Of course, you can always buy water filters and purifiers from almost any store that specializes in camping gear. This would greatly increase your ability to find and purify the water around you. The variety of filters you can get is outstanding, but I would recommend staying away from those that require batteries as I never remember to buy them; and those that require a lot of hand pumping.

The best ones to get are like the one pictured that allow you to fill the top up with water and then gravity slowly pulls it through the filter(s) to the bottom of the container. The ceramic filters are great because they last forever. Very little work required for the entire set up. The water filter pictured has four ceramic elements. The more elements in container the my quickly water is processed, other than that, more filters is not any better. Scrub down the outside of the ceramic filter with a mild abrasive like steel wool, scratch pad, or similar as needed (not very often).

These commercial water filters come in all sizes now, from single serve that fit easily into a backpack all the way up to ones large enough to quench the thirsts of large groups of people. Just remember that all these are somewhat finite in how much water they can purify before the filter needs to be changed. However in an emergency they would be wonderful assets to have.

Finally there are water treatment tablets that you can buy from these same types of camping stores. They will treat the water for you and make it drinkable. They kill almost anything that is in the water, but you need to read the package for specific directions and amounts to be used. These tablets sometimes leave a strong chemical taste behind. If you're planning on using these, just make sure to have some powdered juice handy as that will help make the water easier to drink.

Storing water is not difficult once you decide what you're going to use the water for and how you want to store it. Once you start planning it out and following through, it all begins to fall into place and before you know it you'll have your 14 gallons stored and maybe even more!

MY SURVIVAL PLAN

- **Water**
 - Minimum of 1 gallon per-person / per-day
 - Filtration Unit or Purification Tablets
- **Food**
 - MRE or other rations for 72 hours
- **Shelter**
 - Tent, Tarp or other Shelter
 - Sleeping Bag or Blanket
 - Emergency Blanket
 - Waterproof Poncho
- **Fire Starting / Warmth**
 - Waterproof matches
 - Alternate fire starter
 - Compact stove w/fuel
 - Hand / Body warmers
- **Lighting**
 - Flashlight (Batteries / Alternate Power)
 - Light Sticks or Candles
- **Communication**
 - Radio (Batteries / Alternate power)
 - Whistle
 - Walkie Talkies
- **First Aid**
 - First Aid Kit (Sized Accordingly)
 - Prescription Medications
- **Tools**
 - Knife (Multi-Function)
 - Notepad
 - Rope or Para-cord
 - Sewing Kit
 - Shovel (Compact / Folding)
- **Sanitation**
 - Soap
 - Tissue
 - Other Hygiene Needs
- **Money**
 - Cash and Coins
 - Gold and Silver
- **Documents**
 - Birth Certificates (copy)
 - Insurance Policy (copy)
 - Phone Numbers
 - Financial Contacts

- **Clothing**
 - Complete Extra Set Per-Person
- **Container**
 - Water Resistant Bag,
 - Pack or Bucket (helps carrying, storing and protecting all your items).
- **Consider Adding ...**
 - Hatchet
 - Cooking Utensils
 - Sun Block
 - Zip Closure Bags
 - Portable Toilet
 - Insect Repellant
 - Extra Water Bottles

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Survival Gear

Are you interested in buying quality survival products or selling some survival gear that you own? Please visit our online store to find quality survival gear or create an ad to sell your own gear.

<http://www.survivalpocketapp.com/gear>

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